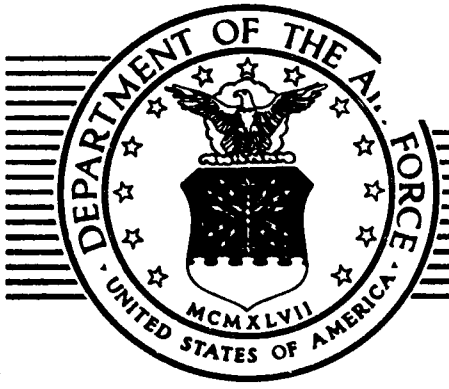





# ENVIRONMENTAL IMPACT ANALYSIS PROCESS

**FINAL**
ENVIRONMENTAL IMPACT STATEMENT
FOR THE CLOSURE OF
PEASE AIR FORCE BASE
VOLUME I
MAY 1990



**DEPARTMENT OF THE AIR FORCE**

**HEADQUARTERS, STRATEGIC AIR COMMAND**
**OFFUTT AIR FORCE BASE, NEBRASKA 68113-5001**

**Air Force**
**Environmental Planning Division**
**(HQ USAF/CEVP)**

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16 JUL 93

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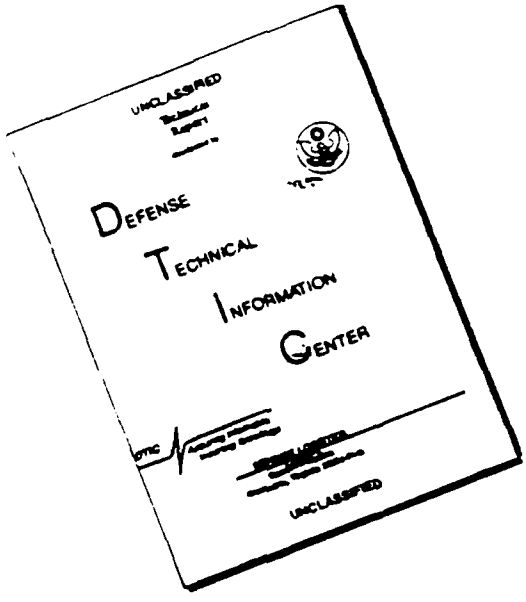


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COVER SHEET

RESPONSIBLE AGENCY: U.S. Air Force

ACTION: Closure of Pease Air Force Base

CONTACT FOR FURTHER INFORMATION: Dr. Hugh Stirts
HQ SAC/DEV
Offutt AFB, NE 68113-5001

DESIGNATION: Final Environmental Impact Statement (FEIS)

ABSTRACT: The action evaluated in this EIS is the halting of operations and removal of equipment and personnel from Pease AFB, New Hampshire. The action involves the deactivation of the 509th Bombardment Wing, which currently operates 21 FB-111 fighter/bomber aircraft and 13 KC-135A tanker aircraft. Provisions of the Base Closure and Realignment Act preclude the examination of any alternatives to closure. Because the Act requires implementation of the closure, "no action" is not an alternative and is not specifically included. A second EIS will be prepared to cover the final disposition of the base property including potential reuse. Closure would significantly reduce on-base activity and associated environmental impacts. Air emissions, wastewater effluents, and solid wastes generated would be substantially reduced from current levels and would result in beneficial impacts to the environment. Effects on ecological resources are expected to be minimal with mitigation as planned. A significant reduction in the area within the 65 dB noise contour would occur due to base closure. Approximately 30 percent of the off-base population previously affected by this level of noise would no longer be subject to it. This reduction in the area affected by high levels of noise is not expected to result in any indirect land use changes because of the uncertainty regarding future use of the base and the possibility that it may be used as a commercial airport.

ENVIRONMENTAL IMPACT STATEMENT
FOR THE CLOSURE OF PEASE AIR FORCE BASE

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**In response to comments on the DEIS, a number of statements and discussions in the text needed to be updated, corrected, or expanded. Changes to the text of the DEIS are presented in bold type in the FEIS.**

## ACRONYMS AND ABBREVIATIONS USED IN EIS

AAFES - Army Air Force Exchange Service
ACE - Advanced Co-Pilot Enrichment Detachment
ADT - Average Daily Traffic
AFB - Air Force Base
AFR - Air Force Regulation
AGR - Active Guard and Reserve
AICUZ - Air Installation Compatible Use Zone
APZ - Air-Accident Potential Zones
AREFG - Air Refueling Group
ARS - Air Refueling Squadron
BASH - Bird Aircraft Strike Hazard
BCR Act - Base Closure and Realignment Act
BEA - Bureau of Economic Analysis
BHWG - Bird Hazard Working Group
BMW - Bombardment Wing
BOD - Biological Oxygen Demand
BX - Base Exchange
CEQ - Council on Environmental Quality
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
Commission - Defense Secretary's Commission on Base Realigment and Closure
CSG - Combat Support Group
CUD - Compatible Use District
CZ - Clear Zone
dB - Decibel
DEIS - Draft Environmental Impact Statement
DERP - Defense Environmental Restoration Program
DOD - Department of Defense
DRMO - Defense Reutilization and Marketing Office
EAC - Economic Adjustment Committee
EIS - Environmental Impact Statement
EPA - Environmental Protection Agency
FAA - Federal Aviation Administration
IFR - Instrument Flight Rules
IRP - Installation Restoration Program
Ldn - Day/Night Sound Levels
MAG - Military Airlift Group
MCL - Maximum Contaminant Level
mg/l - milligrams/liter
NEPA - National Environmental Policy Act
NHANG - New Hampshire Air National Guard
NHDES - New Hampshire Department of Environmental Services
NHDHR - New Hampshire Division of Historical Resources
NOAA - National Oceanic and Atmospheric Administration
NPDES - National Pollution Discharge Elimination System
NPL - National Priorities List
NRHP - National Register of Historic Places

NZ - Noise Zone
OEA - Office of Economic Adjustment
OEHL - Occupational and Environmental Health Laboratory
PAR - Precision Approach Radar
PCB - Polychlorinated Biphenyl
RAPCON - Radar Approach Control
RCRA - Resource Conservation and Recovery Act
Redevelopment Commission - Pease AFB Redevelopment Commission
RI - Remedial Investigation
RI/FS - Remedial Investigation/Feasibility Study
SAC - Strategic Air Command
SARA - Superfund Amendments and Reauthorization Act
SHPO - State Historic Preservation Officer
TCE - Trichlorethane
ug/l - micrograms/liter
USFWS - U.S. Fish and Wildlife Service
VFR - Visual Flight Rules
WS&PC - Water Supply and Pollution Control Division

# EXECUTIVE SUMMARY

The action evaluated in this EIS is the closure of Pease AFB, New Hampshire. The closure is the result of the recommendations of the Defense Secretary's Commission on Base Realignment and Closure, of the legislative requirements in the Base Closure and Realignment Act (Public Law 100-526), and of U.S. Air Force plans to enhance mission readiness and national security. Primarily, the closure of Pease AFB will involve the deactivation of the 509th Air Refueling Squadron and its operational support units. The 13 KC-135A aircraft involved will be reallocated to existing units at five other bases.. Several construction activities will occur regarding the transition of the 157th Air Refueling Group of the New Hampshire Air National Guard (NHANG) into a stand-alone unit in anticipation of local authorities electing to operate the facility as an airport. The activities will consist of interior alterations to three buildings and construction of a gate house, perimeter fencing of the cantonment area, and alteration of the bulk jet fuel storage area. Demolition is planned for one bulk jet fuel storage tank.

Provisions of the Act preclude the examination of any alternative actions to closure. Consequently, this document will only examine alternate methods of carrying out the closure. Because the Act requires implementation of the closure, "no action" is not an alternative and is not specifically included. However, Chapter 3 presents the environmental conditions associated with the installation and its operations and will serve as the baseline against which the implementation impacts are judged.

In addition to the above activities directly related to the closing of the base, a previously programmed force structure change will occur prior to closure of the base. The force structure change involves the deactivation of the 509th Bombardment Wing and the transfer of its 21 FB-111 aircraft assets to the Tactical Air Command. This change was planned prior to the Commission's recommendations. The EIS baseline assumes that all units are currently operational as described in Chapter 3.

Chapter 4 of this document assesses the impacts of the closure of the base (withdrawal of all units). The specific impacts resulting from the previously programmed force structure change are discussed in a separate environmental assessment, but the natural and physical cumulative impacts are included in this EIS. While the environmental impacts to Pease AFB caused by the deactivation or departure of all units are within the scope of the EIS, the environmental impacts caused by the arrival of those units or their assets at new locations are not part of this EIS. Those impacts are being analyzed in separate National Environmental Policy Act documents focusing on impacts and issues at the various receiving bases.

A second EIS will be prepared to cover the final disposition of the base property including potential reuse. This process also involves laws and community issues quite different from the comparatively straightforward steps involved in closure (i.e., halting operations and removing equipment and personnel).

The withdrawal action will result in an insignificant loss of lands available as wildlife habitat. Some habitat changes will occur, which will produce an increase in habitat for some species and a decrease for others. Disturbed areas will be revegetated. The base deer population may increase to a level of conflict with the NHANG and transient aircraft use of the base. Population control measures such as a special hunt may be necessary.. Activities near nesting upland sandpipers will be scheduled to avoid adverse impacts. Solid wastes disposed at local landfills will be reduced which will prolong the use of the landfills by other entities in the community. Annual mass emissions of air pollutants will be reduced.

The potential for accidental releases of hazardous materials will also be reduced. Potential increases in the rate of contaminant migration across the base boundaries because of reductions in ground water withdrawal from the base wells are not expected to be significant. There is the potential for the reduced loading of the wastewater treatment plant to cause a reduction in treatment efficiency upon closure, but significant impacts to the Piscataqua River are not expected to occur.

Base security will continue at a level necessary to provide resource protection. Necessary repairs will be made to historic buildings to prevent deterioration. It was not necessary to evaluate the socioeconomic affects of base closure for completeness of this EIS. The overall impacts on employment and housing of base closure and reuse cannot be identified until the reuse of the base has been determined. Two elementary schools located on base were scheduled for closure along with the base because of reduced enrollment and revenue. Subsequent to preparation of the DEIS, the Portsmouth City School Department decided to continue operation of Jones Elementary School following base closure. Bracket Elementary School will still be closed.

Base fire fighting and rescue capabilities will be maintained by the NHANG following closure. The current community assistance support agreement will need to be renegotiated with the NHANG. The airfield control tower and instrument landing system will be operated by an Air Force contractor. The radar approach control previously scheduled for discontinuance will be operated by the Federal Aviation Administration for air safety purposes following base closure. The commissary, base exchange, and hospital will be closed and special access privileges for retirees will be greatly reduced. Access to an Army Air Force Exchange

Service store to be located in the NHANG cantonment area will be allowed. Noise levels will be significantly reduced over an area involving 2,600 people. Large shipments of equipment and property will be scheduled to avoid peak traffic periods including rush hour and Fridays of summer weekends.

This FEIS has been prepared in two volumes. Volume I contains the main text of the EIS and several small appendices. Volume II contains all of the public comments on the DEIS together with Air Force responses to those comments. Volume II also contains the transcripts from the two public hearings on the DEIS.

# CHAPTER 1 DESCRIPTION OF AND NEED FOR CLOSURE ACTION

## 1.1 INTRODUCTION

The Defense Secretary's Commission on Base Realignment and Closure (Commission) was chartered on 3 May 1988 by the Secretary of Defense to recommend military installations both within the United States and its commonwealths, territories, and possessions for realignment and closure. Subsequently, the Base Closure and Realignment (BCR) Act (Public Law 100-526, 24 October 1988) endorsed the Commission and required the Secretary of Defense to implement its recommendations unless he either rejected them in their entirety or Congress passed (and the President signed) a Joint Resolution disapproving the Commission's recommendations.

The primary criterion used by the Commission for identifying candidate bases was the military value of the installation. However, cost savings were also considered, as were the current and projected plans and requirements for each military service. Lastly, the Commission focused its review on military properties and their uses and not on military units or organizational/administrative issues.

On 29 December 1988, the Commission recommended the realignment and closure of 145 military installations. Of this number, 86 are to be closed fully, 5 are to be closed in part, and 54 will experience a change (either an increase or decrease) as units and activities are relocated.

On 8 January 1989, the Secretary of Defense approved the Commission's recommendations and announced that the Department of Defense (DOD) would implement them. Congress did not pass a Joint Resolution disapproving the recommendations within the time allotted by the BCR Act.

Therefore, the BCR Act requires by law that the Secretary of Defense implement those closures and realignments. Implementation must be initiated by 30 September 1991 and must be completed no later than 30 September 1995. Thus, the decision has been made to close Pease Air Force Base (AFB).

The BCR Act requires that actions be implemented to conform to the provisions of the National Environmental Policy Act of 1969 (NEPA), as implemented by the President's Council on Environmental Quality (CEQ) regulations. In addition, this Environmental Impact Statement (EIS) also follows Air Force Regulation (AFR) 19-2, which implements both NEPA and the CEQ regulations within the Air Force system. However, the BCR Act also modified NEPA to the extent that the environmental analysis should not consider:

- the need for closing or realigning a military installation selected for closure or realignment by the Commission,

- the need for transferring functions to another military installation which has been selected as the receiving installation, or

- alternative military installations to those selected.

## 1.2 LOCATION OF CLOSURE ACTION

Pease AFB is located in southeast New Hampshire, as shown in figure 1-1. As shown in figure 1-2, it is bordered on the east by the city of Portsmouth, on the north by the town of Newington, and on the southwest by the town of Greenland. Part of the base adjoins the Great Bay, which is a significant estuarine resource. Figure 1-3 illustrates general features of the installation. Figure 1-4 presents the typographical features in the vicinity of the base.

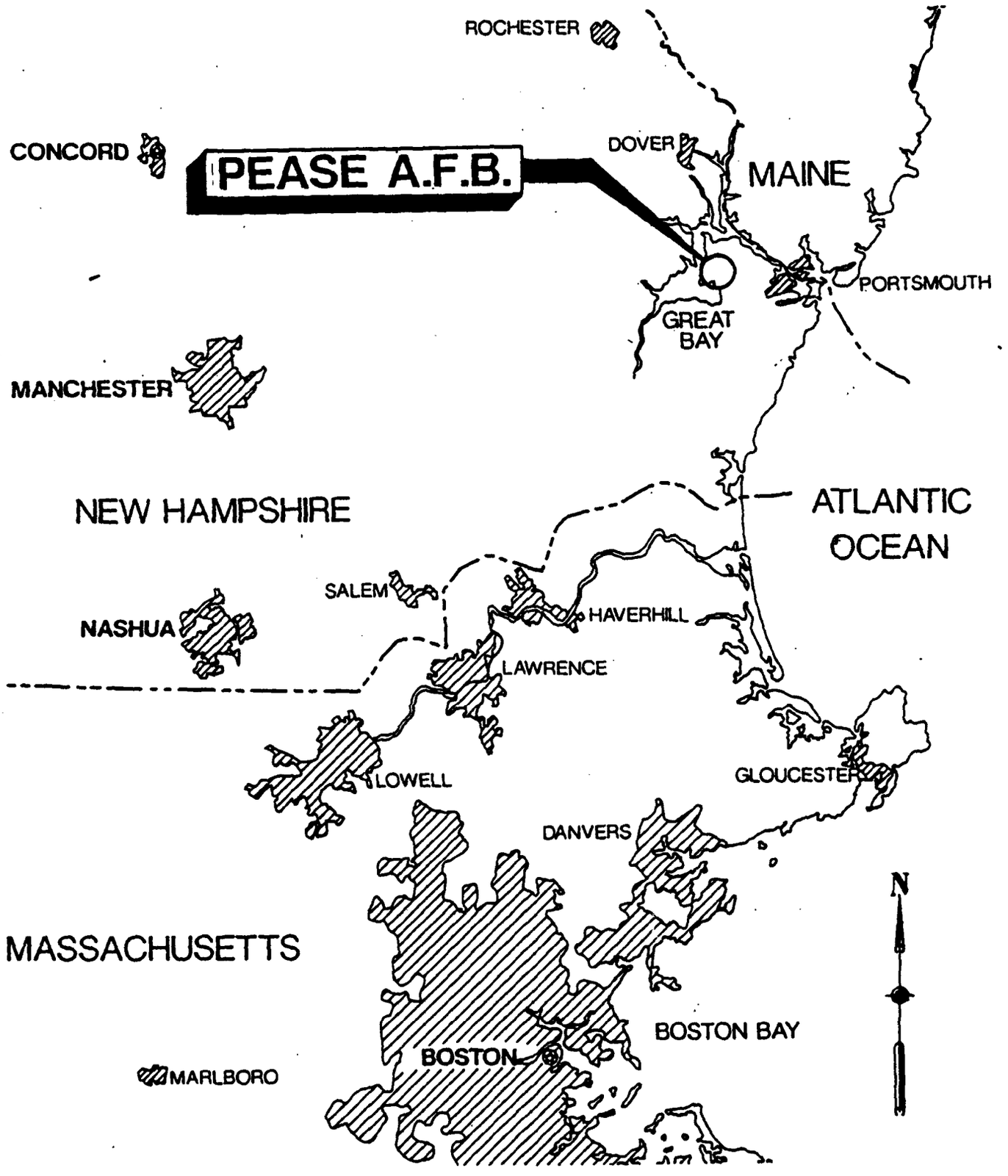
## 1.3 SCOPING PROCESS AND PREPLANNING ANALYSIS

In accordance with the CEQ regulations for implementing the NEPA, the scoping process was initiated with the publication of a Notice of Intent to prepare an EIS for the closure action in the Federal Register on 8 February 1989. One purpose of the scoping process is to publicly determine the scope of issues to be addressed. Another purpose of the scoping process is to identify significant environmental issues that will be analyzed in depth. The process is used to eliminate insignificant issues from detailed analysis.

Input was solicited from interested government agencies and the general public. The notice invited public comment on both the closure of Pease AFB (for this EIS) and the final disposition of the facilities (for a future EIS). Comments on both actions were also solicited at three scoping meetings, which were held in Portsmouth on 15 February 1989, at Pease AFB on 16 February 1989, and in Newington on 28 March 1989. The comment period for the closure action was open until 11 April 1989.

The following concerns and issues regarding the closure of the base were identified during the scoping comment period. Some of these concerns are also relevant to the disposition of the facilities and will therefore be addressed in not only this EIS but also in the future EIS.

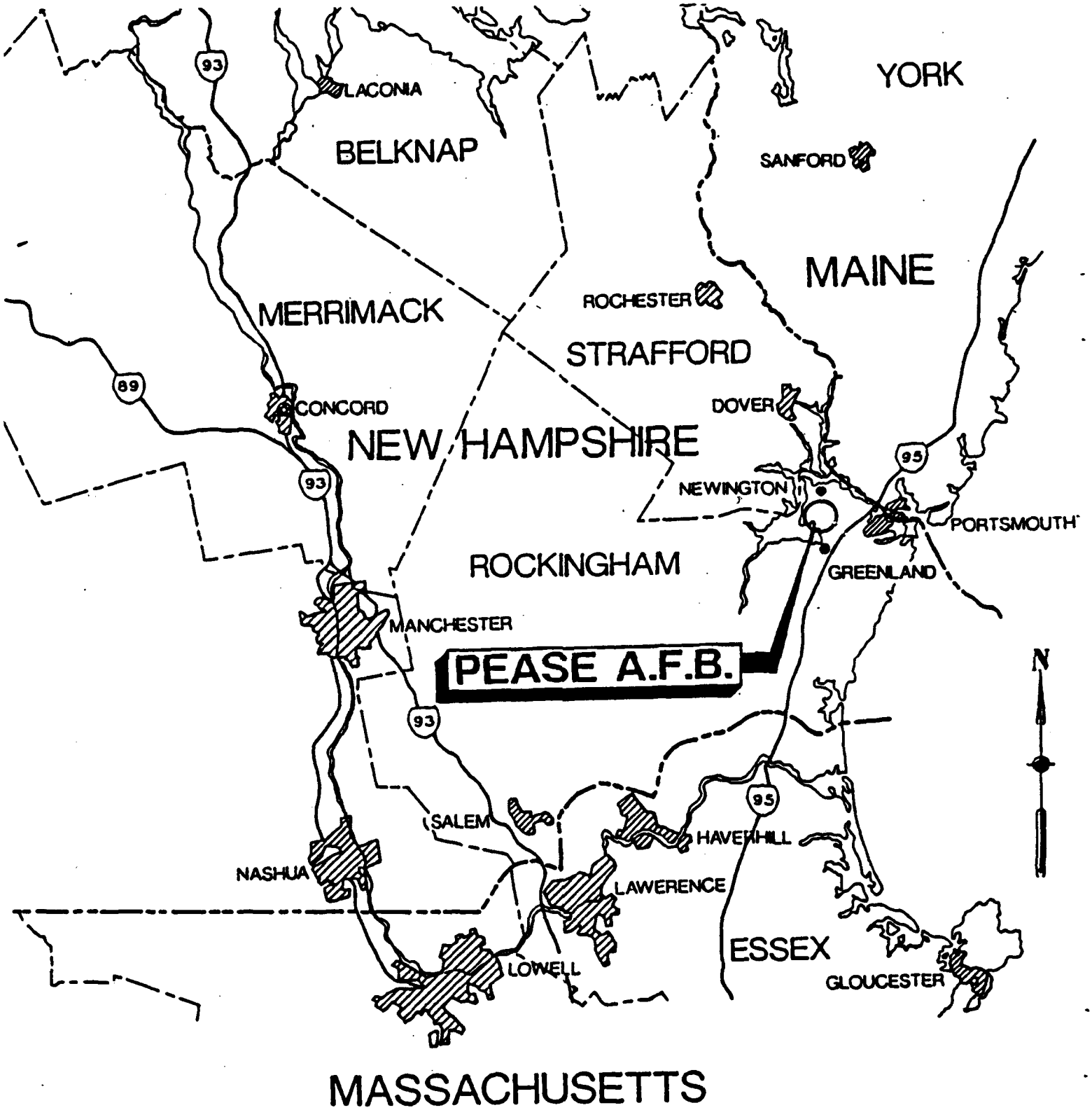
- The extent of ground water contamination and its movement off base due to reductions in water withdrawal from the base wells;




**AREA MAP**

**PEASE AFB CLOSURE EIS**

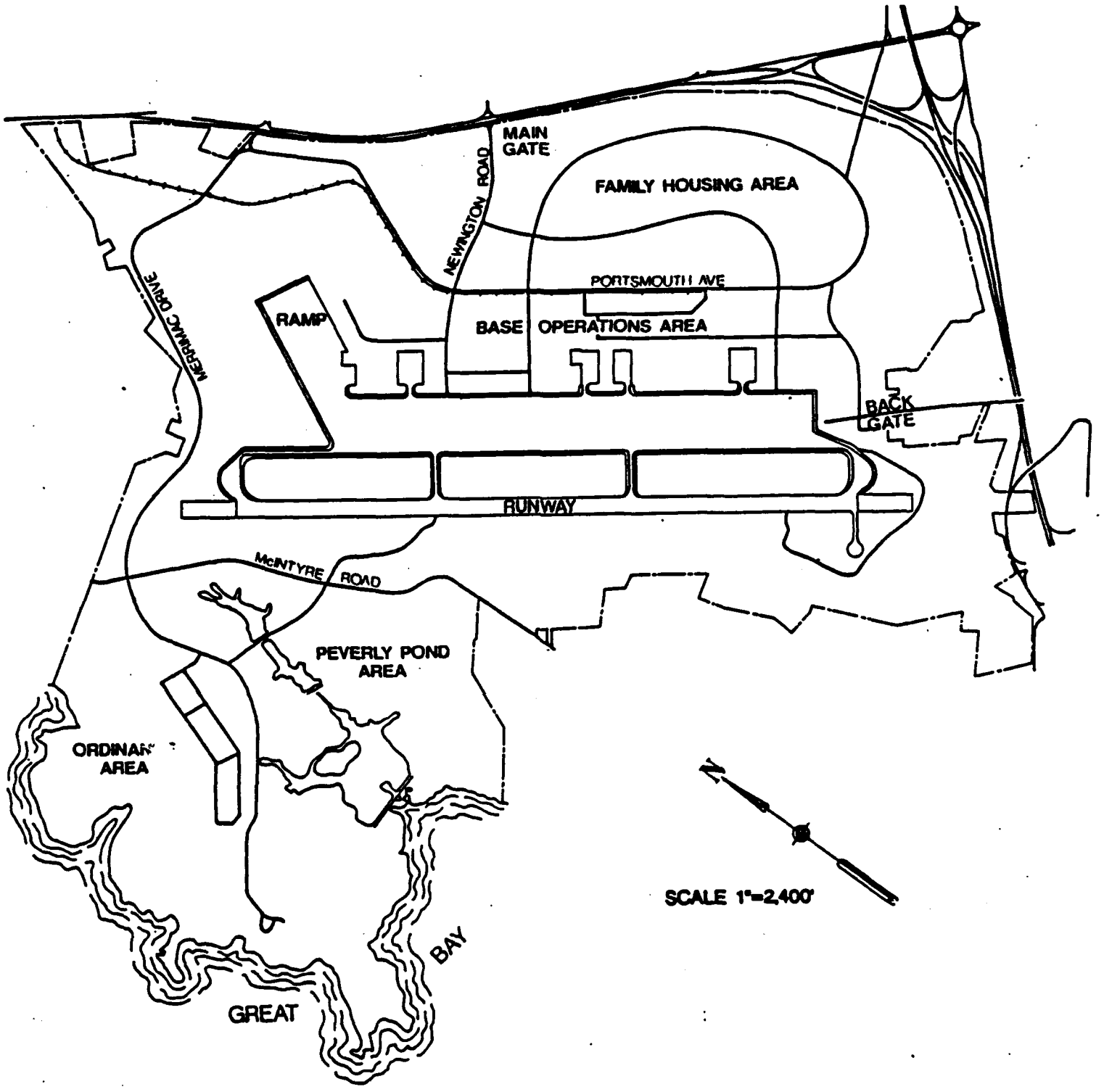
**FIGURE 1-1**




**LOCALE MAP**

**PEASE AFB CLOSURE EIS**

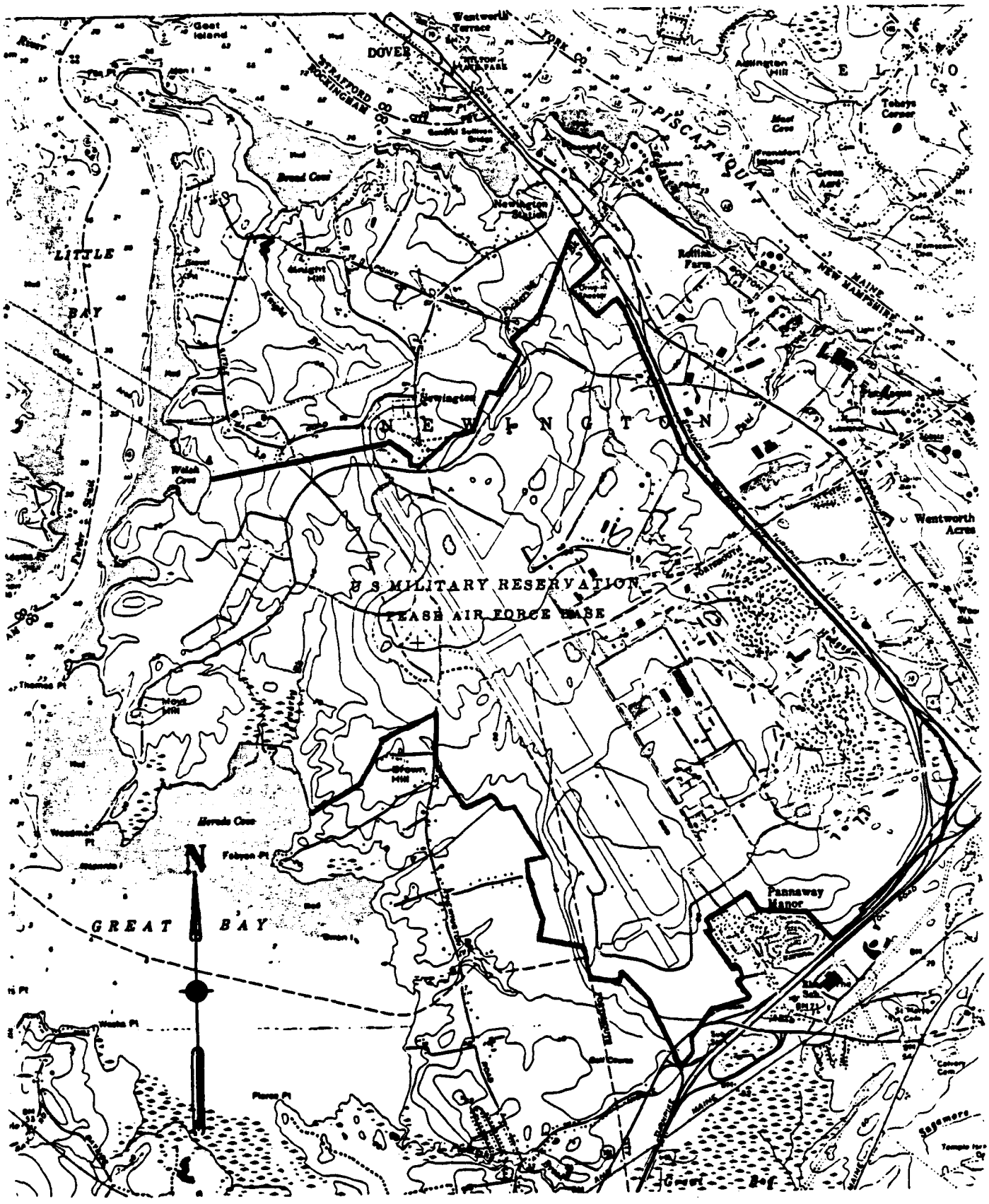
**FIGURE 1-2**




# INSTALLATION MAP

## PEASE AFB CLOSURE EIS

**FIGURE 1-3**




# VICINITY MAP

## PEASE AFB CLOSURE EIS

**FIGURE 1-4**

- The status of current hazardous waste site cleanup and the impacts of closure on that level of cleanup;
- The condition of the tank storage system and the prevention of pollution;
- The prevention of pollution during closure by solid wastes, asbestos, radiological materials, pesticides, herbicides, polychlorinated biphenyls (PCB), trichlorethane (TCE), and lead;
- The habitat loss to fish and wildlife;
- The impacts on historic resources;
- The conformance of the action with environmental statutes;
- The segmentation of action into a closure EIS and a subsequent disposal EIS;
- The loss of nearby medical and other facilities for retired military personnel;
- The loss to communities of an important part-time and full-time labor supply provided by military personnel and their dependents;
- The overall economic impact caused by the loss of Federal employment and expenditures in the area;
- The impact on base recreational uses;
- The impact to the Portsmouth school system caused by the loss of students and their Federal impact aid;
- The impact on area housing and the rental market;
- The impact on the overall ability of the area to obtain Federal grants, aid, and assistance;
- The impact on the property tax base of local communities; and
- The impact on municipal services such as the loss of fire fighting assistance in the seacoast region.

Concerns and issues regarding impacts that will be caused by disposal of the facilities were also expressed in public input received before 11 April 1989. Comments related to disposal and potential reuse of the base will be considered in determining the scope of the second EIS.

## 1.4 RELEVANT FEDERAL, STATE, AND LOCAL STATUTES, REGULATIONS, OR GUIDELINES

Federal, State, and local statutes, regulations, or guidelines that are relevant to the closure action are listed below. A brief discussion of the relevance of each is also presented.

### 1.4.1 General Environmental Policy

National Environmental Policy Act (NEPA). Public Law 91-190 requires that all Federal agencies prepare an environmental assessment and/or an EIS to ascertain the environmental effects of Federal actions that may significantly affect the environment. The CEQ, which was created by this act, promulgated Regulations for Implementing the Procedural Provisions of NEPA. The CEQ Regulations (40 CFR 1500-1508) were used in the preparation of this EIS.

Air Force Regulation 19-2. This regulation gives specific procedural requirements for Air Force implementation of NEPA. It was used together with the CEQ Regulations in the preparation of this EIS.

### 1.4.2 Land Use

Executive Order 12372 - Intergovernmental Review of Federal Programs. This order directs Federal agencies to make efforts to accommodate state and local elected officials' concerns regarding Federal development. It requires that agencies consult with and solicit comments from state and local officials whose jurisdictions would be affected by Federal action.

Coastal Zone Management Act. This act declared a national interest in the effective management, beneficial use, protection, and development of the coastal zone. It indicates that the primary responsibility for planning and regulation of land and water uses rests with the state and local governments.

Air Installation Compatible Use Zone (AICUZ) Program. It is Air Force policy to work toward achieving compatibility between operations and land use in neighboring local communities. The Air Force attempts to accomplish this through the use of the AICUZ concept which is a system for identifying compatible future land use in areas impacted by airfield operations. Accident potential and noise levels are considered in determining land use compatibility. Compatible use districts and building standards are provided as guidelines for local land use planners in the AICUZ reports. The actual planning and regulation of future land use in impacted areas is the prerogative of local government having zoning, subdivision, and building code authorities. In New Hampshire, land use regulatory authorities are primarily the responsibility of cities and

towns. An AICUZ report was prepared for Pease AFB in 1987. Communities currently having land use or zoning regulations which do not wholly reflect the recommendations in this report include the cities of Portsmouth and Dover and the towns of Newington, Durham, Rye, Greenland, and Madbury.

New Hampshire House Bill 750. This bill, which was passed by the State House of Representatives and the State Senate, was signed into law by Governor Judd Gregg in March 1989. This bill established the Pease AFB Redevelopment Commission for the purpose of monitoring and studying the closing of the base. This Commission is also charged with the responsibility of developing a reuse plan for the installation.

### 1.4.3 Public Health and Safety

Executive Order 12088 - Federal Compliance with Pollution Control Standards. This order directs that Federal agencies consult with state and local agencies concerning the best techniques and methods available for the prevention, control, and abatement of environmental pollution. A Federal agency must also comply with applicable pollution control standards concerning air pollution, water pollution, hazardous materials, and hazardous substances.

Resource Conservation and Recovery Act (RCRA). This act contains provisions for the safe treatment and disposal of wastes and is the basic law for regulation of hazardous waste management practices. Under this act, the Environmental Protection Agency (EPA) defines which wastes are hazardous and sets standards for treatment, storage, and disposal. The act also specifies regulation of underground storage tanks.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This act establishes the procedures for responding to hazardous substance releases to the environment and requires creation of a National Priorities List (NPL) which sets forth the sites considered to have the highest priority for cleanup under Superfund. The Air Force manages and coordinates its own CERCLA activities consistent with criteria, guidelines, and rules under Section 120 of CERCLA promulgated by EPA.

The DOD program is known as the Defense Environmental Restoration Program (DERP). The identification, investigation, research and development, and cleanup of contamination from hazardous substances, pollutants, and contaminants are goals of this program.

The Air Force has instituted the Installation Restoration Program (IRP) for the purpose of assessing and controlling migration of environmental contamination that may have resulted from past operations

and disposal practices on Air Force facilities. The IRP is funded by the Defense Environmental Restoration Account, which is an annual appropriation to deal primarily with CERCLA response actions.

Superfund Amendments and Reauthorization Act (SARA). This act reauthorizes CERCLA and establishes a variety of requirements relating to the level of cleanup for remedial actions. The act also establishes directives for selecting permanent remedies, meeting state requirements, and establishing the role of the state in the cleanup process. The act also codified the DERP.

State Regulations Applicable to Disposal of Pesticide and Pesticide Containers. These regulations prescribe methods for proper disposal of pesticides and pesticide containers.

State Regulations Applicable to Underground Storage Tanks Closure and Reuse. These regulations prescribe standards applicable to the closure and reuse of underground storage tank facilities.

### 1.4.4 Air Quality

Clean Air Act. This act legislates that air quality standards set by Federal, state, and county regulatory agencies establish maximum allowable emission rates and pollutant concentrations for sources of air pollution on Federal and private property. Also regulated under this law is the proper removal and safe disposal of asbestos from buildings other than schools.

State Regulations Applicable to Operation of Sources of Air Pollution. These regulations establish emissions limitations and require that there be no significant deterioration of existing air quality. They also require written consent for the transfer of permits.

### 1.4.5 Water Quality

Clean Water Act. Under this act, EPA was required to establish Federal limits on the amount of specific pollutants that could be released by municipal and industrial facilities. These limitations are written into National Pollutant Discharge Elimination System (NPDES) permits issued by EPA to all dischargers in the State of New Hampshire. Once certified, an EPA NPDES permit becomes a State permit in New Hampshire.

State Regulations Applicable to Surface Water Quality Standards. These regulations establish three classes of surface waters. Each class is assigned certain uses and water quality standards. Class A waters are considered potentially acceptable for water supply uses after disinfection. No discharge of sewage, wastes, or other polluting

substances is allowed in these waters. Class B waters are considered acceptable for bathing and other recreation and for water supply after adequate treatment. Only adequately treated sewage and wastes are allowed disposal in these waters. Class C waters are considered acceptable for recreational boating or fishing or for industrial water supply uses with or without treatment. Unreasonable sewage and wastes are not allowed in these waters.

Safe Drinking Water Act. This act establishes the amount of concentrated contaminants allowable in public drinking water.

State Regulations Applicable to Protection of Ground Waters. These regulations prohibit the degradation of ground water beyond the owner's property.

State Regulations Applicable to Drinking Water Quality. These regulations list maximum contaminant levels for chemicals that are in the public water systems.

### 1.4.6 Biological Resources

Endangered Species Act. This act requires Federal agencies to determine the effects of their actions on endangered species and their critical habitats.

Fish and Wildlife Coordination Act. This act requires consultation with the U.S. Fish and Wildlife Service (USFWS) to consider fish and wildlife resources in determining agency actions.

Executive Order 11990 - Protection of Wetlands. The key requirement of this order is determining whether a practicable alternative to locating an action in wetlands exists. If there is no practicable alternative, the action must include all practical measures to minimize harm to the wetlands.

State Regulations Applicable to Endangered and Threatened Species. These regulations prohibit harming any listed species which may occur in the area.

State Regulations Applicable to Wetlands. These regulations require a permit from the state Wetlands Board before removing, filling, dredging, or constructing any structure in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state.

### 1.4.7 Historic Resources

**National Historic Preservation Act**. This act outlines agency responsibilities involving actions which affect historic properties. It affords the Advisory Council on Historic Preservation an opportunity to comment and requires consultation with the State Historic Preservation Officer (SHPO).

# CHAPTER 2 ALTERNATIVES CONSIDERED INCLUDING THE CLOSURE ACTION

## 2.1 INTRODUCTION

No alternatives to closure of Pease AFB exist as a result of the legislation associated with the action. The BCR Act, Public Law 100-526, specifically states that the Secretary of Defense in applying the provisions of NEPA shall not have to consider alternative military installations to those selected. Although Public Law 100-526 does not require consideration of alternatives, NEPA requires consideration of the "No Action" alternative, which in this case would be continued operations of the facility. However, implementation of the "No Action" alternative is not within the authority of the Air Force. To rescind Public Law 100-526, congressional action would be required.

The closure action will involve deactivation of the 509th Bombardment Wing (BMW), which currently operates 21 FB-111 fighter/bomber aircraft and 13 KC-135A tanker aircraft. Because of a previously programmed force structure action, the relocation of the 21 FB-111 aircraft at Pease AFB is not considered as part of the closure action. The relocation will occur in the July to September 1990 time period and will involve the inactivation of the following three units of the 509th BMW:

393 Bombardment Squadron
715 Bombardment Squadron
509 Munitions Maintenance Squadron.

The relocation of the personnel, assets, and aircraft of these units has been assessed in a separate Air Force environmental impact document entitled "Environmental Assessment for the Force Structure Action at Pease Air Force Base," dated February 1990. The cumulative (additive) impacts of the force structure action and the closure action, however, are addressed in this EIS.

This EIS also does not cover the final disposition of the 157th Air Refueling Group of the New Hampshire Air National Guard (NHANG) which is assigned to Pease AFB and operates 10 KC-135E aircraft. This unit will have to be relocated if local authorities do not elect to operate the facilities as an airport. If relocation is required, that action will be the subject of appropriate NEPA assessment.

## 2.2 DETAILED DESCRIPTION OF CLOSURE ACTION

### 2.2.1 Deactivation

The closure action will involve the deactivation of the following units of the 509th BMW and two detachments:

HQ 509 Bombardment Wing
509 Air Refueling Squadron
509 Avionics Squadron
509 Field Maintenance Squadron
509 Organizational Maintenance Squadron
509 Supply Squadron
509 Transportation Squadron
509 Civil Engineering Squadron
509 Security Police Squadron
509 Services Squadron
509 Comptroller Squadron
509 Mission Support Squadron
Detachment 7, 3904 Management Engineering Squadron
Detachment 202, 3752 Field Training Squadron

Tenant units and assets to be realigned and the installations to which they will be reallocated, if known, are:

541 Air Force Band to Hanscom Air Field, Massachusetts
Tanker Task Force to Plattsburgh AFB, New York
KC-135 Simulator to Eaker AFB, Arknasas
Physiological Training Unit to Plattsburgh AFB, New York
1916 Communication Squadron
Detachment 4, 2 Aircraft Delivery Group to Langly AFB, Virginia
3519 USAF Recruiting Squadron to NHANG Cantonment Area
Detachment 6, 26 Weather Squadron (one weather observer to remain in NHANG Cantonment Area)
Air Force Commissary Service (in part) to Hanscom Air Field, Massachusetts

An Advanced Co-Pilot Enrichment (ACE) Detachment from Vance AFB, Oklahoma, which is currently assigned to Pease AFB, will also be reassigned. This detachment, which has three T-37 aircraft assigned to it, will return to Vance AFB.

The 13 KC-135A tanker aircraft assigned to the 509th Air Refueling Squadron (ARS) will be reallocated in the last half of calendar year 1990 to existing units located at five other bases. The five other bases and the number of aircraft each will receive are:

two aircraft to Carswell AFB, Texas
one aircraft to Eaker AFB, Arkansas
six aircraft to Fairchild AFB, Washington
two aircraft to Plattsburgh AFB, New York
two aircraft to Wurtsmith AFB, Michigan

The units listed above will be inactivated on 30 September 1990, with the exception of the 509th ARS. On 1 October 1990, the 509th Combat Support Group (CSG) will become the host unit to complete the base closure plan. The 509th ARS will be inactivated on 1 November 1990. The 509th Strategic Hospital will be inactivated when the total base population reaches 1,000 active duty personnel. When the 509th CSG inactivates on 1 April 1991, a detachment from Plattsburgh AFB will activate and provide for the care and custody of all excess real and related personal property until it is disposed of by the Air Force. During this protection and maintenance status, the airfield will remain operational.

In October 1989, there were 3,465 military personnel and 537 civilian Federal employees composing the Air Force contingent at the base. These figures do not include NHANG assignments. Military personnel were accompanied by approximately 4,746 dependents. The withdrawal of the FB-111 aircraft and supporting units will result in a reduction of military strength at Pease AFB of 1,196 persons. An additional 36 civilian jobs will be eliminated or moved elsewhere. Approximately 1,569 dependents are expected to leave with the military personnel. The redistribution of the KC-135 unit and other operational and support units cumulating in the closure of the base will involve the remaining 2,269 military personnel and an estimated 3,177 dependents. The remaining 501 civil service positions will be moved or eliminated. Approximately 1,500 military support personnel will be dispersed throughout the Strategic Air Command (SAC) and other Air Force commands, with overseas commands as top priority. A maintenance staff of approximately 50 employees will remain at the end of the second quarter of Fiscal Year 1991.

Base lands include the necessary property rights for the operation of a spur railroad track. The spur runs from an active spur track of the Boston-Maine Railroad Company near the Piscataqua River to its on-base terminus near the bulk fuel storage area, covering a total distance of approximately 1-1/2 miles. (The on-base terminus of the spur track is shown in figure 2-2.) The track is in poor condition and has been removed in some locations. For this reason, Pease AFB intends to transport most property by means of commercial road vehicles. The most probable direction of transport will be east from the main gate onto the Spaulding Turnpike for approximately 2 miles to the junction of Interstate 95. The peak time for movements will be from June 1990 until March 1991. The volume, type of equipment to be moved, and specific destinations to which it will be sent are under determination. The aircraft will be flown to the receiving installations. Some of the Air Force personal property will also be transported to the receiving installations. Some may be transported to nearby installations in need of the property, some may be surplused, and some may be retained on base to be sold with buildings as furnished facilities.

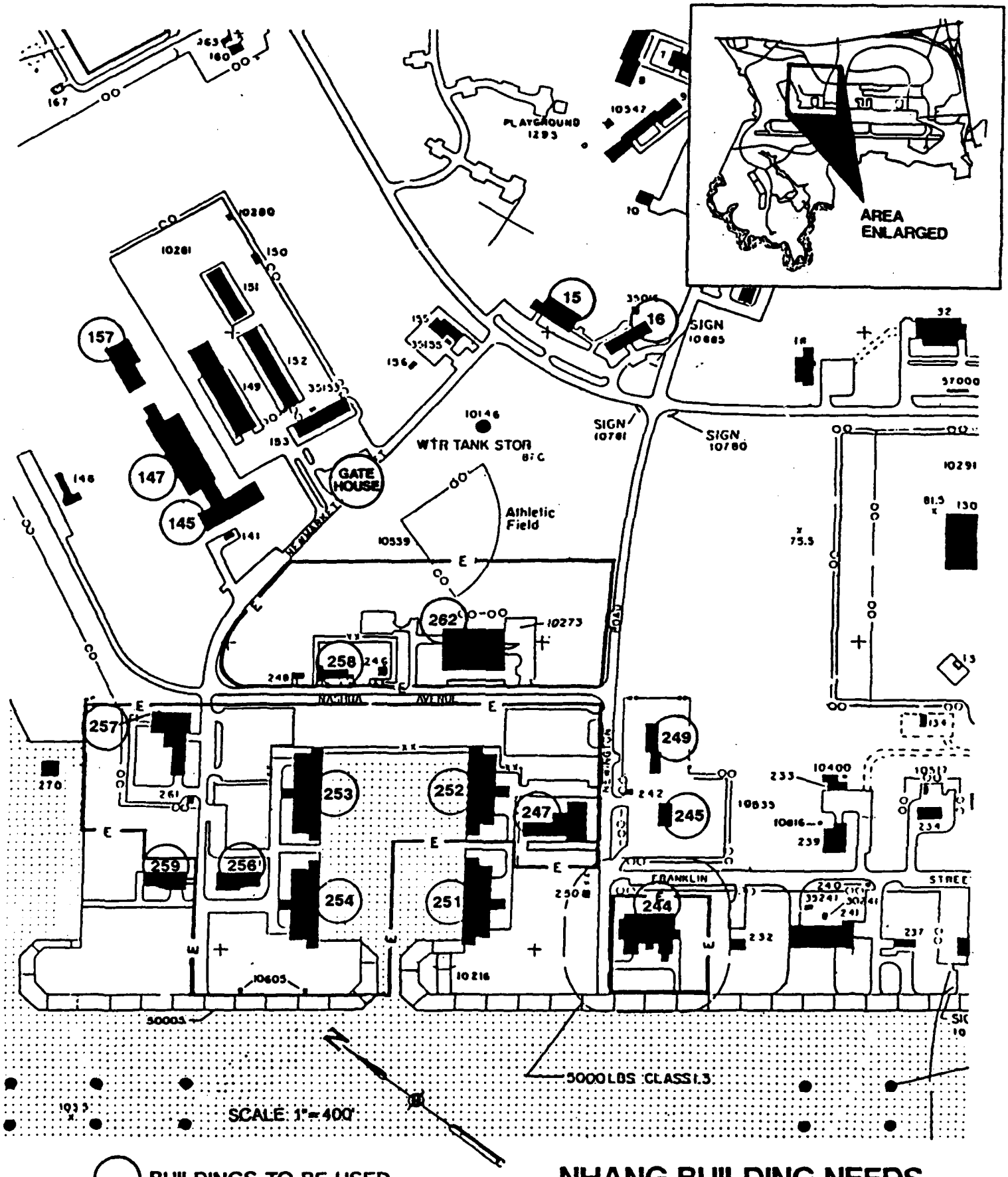
## 2.2.2 New Hampshire Air National Guard (NHANG) Unit

The 157th Air Refueling Group of the NHANG will remain within its current cantonment area of approximately 275 acres pending a decision on the disposal and reuse of the installation. If the local authorities elect to operate the facility as an airport, the transfer of property ownership would be expected to include a memorandum of agreement that would permit the continued presence of the NHANG and provide for the unit's future requirements. If local authorities did not elect to operate the facility as an airport, the NHANG unit would have to be relocated. The Commission noted in its report that Pease AFB is high on the Federal Aviation Administration's (FAA) list of military bases with a potential for civilian use. The Commission also believes that the NHANG unit would likely be allowed to remain.

Operation and maintenance of the physical plant (heat plant and all utilities such as water, electricity, and sewage treatment) will continue until all occupants have left and the properties have been completely transferred. Support to the NHANG for its operational needs will continue during the potential transition. The unit will continue its existing flying mission with its 10 KC-135E aircraft. The NHANG will require additional military construction, operation and maintenance, fire protection, equipment, and personnel resources to operate as a stand-alone unit. The current strength of the NHANG unit of 49 Active Guard and Reserve (AGR), 220 civil service, and 4 State employee positions will be increased to 85 AGR, 240 civil service, and 16 State employee positions during the conversion to a stand-alone unit. Drill strength will increase from 1,045 to 1,124 positions. Full-time Federal employees are part of the drill strength.

Buildings currently licensed from the Air Force by the NHANG are listed in table 2.2.2-1. Buildings that the NHANG has requested upon closure are listed in table 2.2.2-2. Building 21 is planned to be released for disposal. The 18 buildings listed in table 2.2.2-2 are shown in figure 2-1.

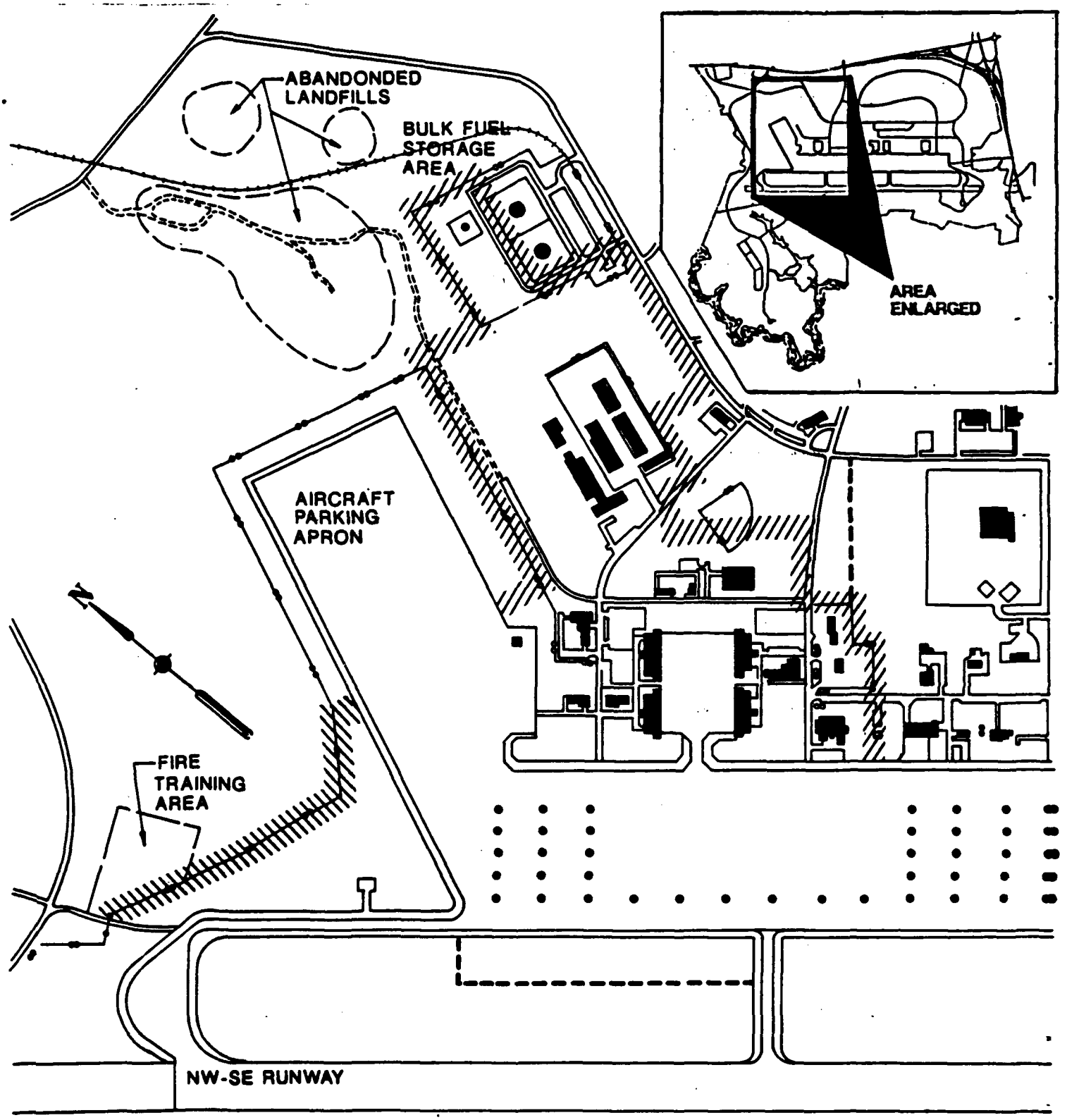
Several construction projects are required to support the transition of the NHANG unit into a stand-alone unit. Existing masonry buildings 147 and 259 will be altered with interior partitions into a communications facility and an alert crew facility for the unit's KC-135E alert mission. An electronic security system and perimeter fencing of the cantonment area will be installed as shown in figure 2-2. A masonry gate house will be constructed. Aircraft ramp lighting for the alert aircraft parking area will be upgraded. Building 145 will be altered with interior partitions into a dining hall. These construction activities are estimated to cost $2.3 million. Funding for these projects will be provided in budget years




# NHANG BUILDING NEEDS

## PEASE AFB CLOSURE EIS

**FIGURE 2-1**




SCALE 1" = 800'

LEGEND:

//////// CHAINLINK FENCE

----- 3-STRAND BARBED WIRE FENCE

# NHANG FENCING NEEDS

## PEASE AFB CLOSURE EIS

**FIGURE 2-2**

1990 and 1991. Construction is scheduled to begin in June 1990 and end in October 1991.

Table 2.2.2-1
Current NHANG Buildings Licensed from the Air Force

| Building | Function |
|---|---|
| 15 | Medical Training and Comm Flt |
| 21 | State Staff |
| 244 | Avionics and Aircraft Maintenance |
| 247 | Squadron Operations |
| 252 | Engineering, Aerospace Ground Equipment |
| 253 | Fuel Cell Repair and Phase Dock |
| 256 | Security Police |
| 257 | Operation and Training |
| 258 | Vehicle Maintenance |
| 262 | Supply |

Table 2.2.2-2
Potential Use of Existing Buildings by the NHANG

| Building | Function |
|---|---|
| 15 | Medical Training and Administration |
| 16 | State Staff and Operations and Training |
| 145 | Dining and Operations and Training |
| 147 | Communications Center, Engineering, Disaster Preparation |
| 157 | Vehicle Maintenance and Snow Equipment Barn |
| 244 | Avionics, Security Police |
| 245 | Petroleum, Oils, Lubricants |
| 247 | Operations and Training |
| 249 | Refueler Maintenance |
| 251 | Hangar |
| 252 | Aerospace Ground Equipment, Cold Storage |
| 253 | Fuel Cell/Corrosion Control |
| 254 | Phase Dock and Aircraft Maintenance Shop |
| 256 | Life Support and Squadron Operations |
| 257 | Base/Squadron Operations |
| 258 | Mobility Storage |
| 259 | Alert Crew Quarters |
| 262 | Resource Management Squadron/Supply |

To support the operations of the NHANG unit, an existing 500,000 gallon tank currently used for storage of JP-7 fuel will be converted to storage of JP-4 fuel. Improvements to this tank are estimated to cost $1.6 million and will include: diking improvements, vapor control, a new pump house, transfer piping and connection to the hydrant fueling system, a truck fill stand, paving, and fencing.

Other fuel lines and tanks excess to the needs of the NHANG will be rendered temporarily out of service in accordance with applicable underground storage tank regulations. All below grade piping will be thoroughly flushed to remove residual fuel, capped, and abandoned in place. As a minimum, below grade tankage will be cleaned and filled with inert material. The Air Force will remain re-sponsible for permanent closure of fuel lines and tanks excess to the needs of the NHANG if the decision to use the base as an airport is not accepted.

### 2.2.3 Public Health and Safety

The removal of hazardous materials and wastes associated with current operations will be carried out in conjunction with the withdrawal of the units. To ensure that regulatory requirements are met for items such as asbestos removal prior to complete turnover, Bioenvironmental and Civil Engineering staff may be maintained, government employees may be temporarily assigned, or contractors may be employed. All permitted radioactive materials will be returned to Air Force inventory in accordance with Air Force regulations.

The Air Force will maintain responsibility for investigation and remediation of all sites which have been identified as contaminated or potentially contaminated by previous hazardous waste disposal activities or by the release of hazardous materials. Decisions regarding future actions at the IRP sites will be coordinated with State and Federal regulatory agencies in accordance with procedures to be developed in response to listing of the base on the EPA's NPL for uncontrolled hazardous waste sites. Chapter 3 further discusses the IRP at Pease AFB.

### 2.2.4 Economic Adjustment Assistance

Economic adjustment assistance to communities located near Pease AFB has been initiated by the DOD Office of Economic Adjustment (OEA). Economic adjustment is a process by which organization, planning, and resources are joined to maintain or restore community stability. The Pease AFB Redevelopment Commission was established and funded by the New Hampshire legislature during its 1989 session expressly to monitor and study base closure and to formulate a comprehensive plan for conversion and redevelopment of the base. The OEA will coordinate with this Commission in providing economic adjustment assistance to the area.

# CHAPTER 3 AFFECTED ENVIRONMENT

## 3.1 HISTORY AND CURRENT MISSION OF PEASE AFB

### 3.1.1 History

The Pease AFB site was developed in the early 1930's by the City of Portsmouth, New Hampshire, as a 300-acre municipal airport. The airport was leased by the Navy during World War II and, in 1946, exclusive rights to the field were transferred from the Navy to the Air Force. In 1951, the installation was selected for development as a SAC base. Purchase of additional land needed for expansion of the base started in 1952 and was completed in 1956. Ground breaking for the new SAC facilities took place in 1954 and the first Boeing B-47 bombers arrived in 1956.

The air base was initially known as Portsmouth AFB. In 1957, it was rededicated as Pease AFB in honor of Captain Harl Pease, Jr., a native of Plymouth, New Hampshire. During World War II, Captain Pease had earned a Congressional Medal of Honor.

During its history, Pease AFB has been the home of the 100th BMW and the 509th BMW. Bomber aircraft based at Pease AFB have included the Boeing B-47 and B-52 long range bombers and the FB-111 fighter-bomber which is currently the primary assigned aircraft of the 509th BMW. The FB-111 aircraft are now scheduled for withdrawal from the base starting in July 1990. Refueling squadrons at Pease have operated KC-97 and KC-135 tanker aircraft.

The NHANG relocated the 157th Military Airlift Group (MAG) from Grenier Field at Manchester, New Hampshire, to Pease AFB in 1966. The mission of this group was changed in 1975. It was then designated as the 157th Air Refueling Group (AREFG). The 157th has operated the C-124 Globemaster and the C-130 Hercules cargo aircraft, and, most recently, the KC-135 tankers.

### 3.1.2 Mission

Pease AFB is the home of the 509th BMW, whose mission is to develop and maintain operational capacity to permit the conduct of strategic warfare in the event of war. All the resources of this wing are focused on the support of its three tactical squadrons. The 393rd and 715th Bomb Squadrons are responsible for training and equipping air crews for proficiency in aerial bombardment and for maintaining air crews capable of conducting combat operations. The 509th ARS is responsible for aerial refueling. The 509th CSG is responsible for providing support services

to the 509th BMW. These services include facility maintenance, base security, financial administration, and personnel administration.

## 3.2 GENERAL DESCRIPTION OF THE INSTALLATION AREA

### 3.2.1 Topography

The topography of Pease AFB is gently rolling coastal terrain. The prevalent feature is a ridge extending in a northwest direction on which the runway is located. The ridge is 60 to 100 feet in elevation and approximately one-half mile wide. The base has a total area of 4,250 acres, with over one-half of the lands in a forested condition.

### 3.2.2 Climate

The climate of the New Hampshire seacoast is moderate, with four distinct seasons. Temperature extremes average from a high of 95 degrees F. to a low of -4 degrees F., with an average mean temperature of 50 degrees F. On an average, 185 frost-free days occur from April to October. Average rainfall is 50 inches and average annual snowfall is 62 inches.

## 3.3 SOILS

The soils on the base are generally glacial deposits consisting of unsorted clay, silt, sand, gravel, cobbles, and boulders. On the eastern part of the base, glacially derived soils grade into marine clays and glacial till. A soil series map of the base was evaluated in 1984 by the Soil Conservation Service to determine the base acres of prime farmland. The evaluation determined there are 208 acres of prime farmland consisting of fine, sandy loam soils. They are located in the Peverly Pond area. Most of the areas identified as prime farmland are either wooded or currently used for base operations and are not available for agricultural production.

Pease AFB is predominantly underlain by Pleistocene-age glacial till, marine clays, and sand and gravel deposits having a wide range of water-bearing potential. These deposits are underlain by pre-Silurian-age (>410 million years old) metasedimentary rocks moderately to highly fractured in the upper zones. The permeable sand and gravel deposits and the upper fractured zones of bedrock are the two principal receptors and migration pathways at sites where contamination is found.

## 3.4 HAZARDOUS MATERIALS AND SOLID WASTES

### 3.4.1 Underground and Aboveground Tank Storage

At Pease AFB, there are 156 underground storage tanks that are used or have been used. Tank sizes range from 250 to 50,000 gallons. Tank ages range from 1 to 33 years with 110 tanks in the 30- to 33-year age bracket, 21 tanks in the 11- to 29-year age bracket, and 25 tanks in the 1- to 10-year age bracket. Related piping systems are of the same age and materials as the tanks.

There are 138 steel tanks that are (or have been) used for storing jet fuel, fuel oil, diesel fuel, gasoline, deicing fluid (methylene glycol), and used oil. Of the steel tanks, 84 are currently in use, 20 are empty, 6 have been filled with sand, 6 have been removed, and 22 have been treated with and still contain a caustic solution that enables quick dewatering and placement back into service. If the tanks are returned to service and the caustic solution is determined to be a hazardous waste, it would be appropriately disposed of.

Sixteen tanks are fiberglass-reinforced plastic. They are still in use storing mostly gasoline, but also diesel fuel, jet fuel, and unserviceable jet fuel.

Two concrete tanks were previously used to store waste TCE. One of these was removed in 1988, and the other, which is empty, will be removed in the spring of 1990. Both tank sites are of concern in the IRP discussed in Section 3.4.8. The site of the tank which has already been removed is undergoing expedited remedial action. The site of the tank which is to be removed in the spring of 1990 is undergoing further evaluation.

Currently planned underground storage tank projects, including removal, replacement, installation of overfill protection, and internal and subsurface monitoring, are identified in table 3.4.1-1. The objective of these projects is to bring the tanks into compliance with applicable Federal and State regulations. All of these projects are planned for completion prior to disposal of the installation; however, they are subject to availability of funds and to approval by the State of New Hampshire.

Three large aboveground tanks used to store jet fuel are located in the bulk fuel storage area. Tank 1, with a capacity of 500,000 gallons, contains JP-7 fuel. Tanks 2 and 3, each with a capacity of 5 million gallons, contain JP-4 fuel. All three tanks were constructed in 1955 and are provided with earthen dike containment. The base maintains an Oil and

Hazardous Substance Pollution Contingency Plan and a Spill Prevention, Control, and Countermeasures Plan for these and all other tanks on base.

Table 3.4.1-1
Planned Underground Storage Tank Work

| Fiscal Year | Number of Tanks | Work To Be Performed |
|---|---|---|
| 1990 | 8 | Conduct tank tightness tests |
| 1990 | 33 | Remove |
| 1990 | 8 | Replace aboveground |
| 1990 | 20 | Install overfill protection |
| 1990 | 67 | Conduct internal and sub-face monitoring |
| 1990 | 17 | Treat with caustic solution |

Tanks 1 and 2 are epoxy coated and are considered to be in good structural condition. Tank 2 was inspected and cleaned in June 1989 and was found to have an inadequate water sump for removing water. The perimeter of the tank was also found to have settled up to one-half inch in some areas. Replacement of the water sump is not planned because it would be an unjustifiable major repair action with closure of the base.

Tank 3 was inspected in September 1988 and the floor was found to contain numerous pits that were within one-sixteenth of an inch of penetrating the floor. These pits were temporarily patched with epoxy. The floor was also found to be buckled in many areas because the perimeter of the tank had settled up to 2 inches in some areas. Tank 3 has been scheduled for demolition. The tank has been cleaned and the demolition work is currently being advertised. The underground piping associated with Tank 3 will be flushed to remove all residual JP-4 and then capped.

Throughout its history, a number of accidental fuel releases have occurred at the bulk fuel storage area. Accidental releases have occurred elsewhere on the base also. In 1983, for example, 277 releases occurred. The majority occurred on the flightline parking apron and involved less than 5 gallons of fuel per incident. The environmental impact of all 277 releases was considered insignificant due to quick cleanup responses. All recorded significant releases have been investigated under the IRP program for potential contamination of soil or water resources.

### 3.4.2 Hazardous Materials and Hazardous Wastes Storage

Hazardous materials are stored throughout the industrial area of Pease AFB. Appendix A contains a listing of the hazardous materials and their locations on base.

Pease AFB operates as a generator of hazardous wastes only and in full compliance with all State and Federal RCRA requirements relating to storage and disposal. In accordance with a hazardous waste management plan, hazardous wastes generated at various locations are accumulated in or adjacent to several buildings prior to disposal. Disposal occurs within 90 days of accumula-tion. Past and current locations of accumulated wastes are presented in Appendix B. Sludge created by base oil/water separators are also con-sidered and treated as hazardous waste. The annual amounts of hazardous wastes generated at Pease AFB since 1986 is presented in table 3.4.2-1.

Table 3.4.2-1
Annual Amounts of Hazardous Wastes Generated at Pease AFB
(Pounds)

| Fiscal Year | Amount |
|---|---|
| 1986 | 29,596 |
| 1987 | 80,250 |
| 1988 | 134,748 |
| 1989 | 88,244 |

Source: Pease AFB Civil Engineering Office (from disposal manifests).

Some containerized hazardous wastes, such as methyl ethyl ketone, are occasionally located on barren soil, up-gradient from storm drains, or in close proximity of floor drains. Corrective action currently being taken is the prompt disposal of these containerized wastes.

All hazardous wastes generated at Pease AFB are disposed of at appropriately permitted facilities located off-base. Arrangements for disposal are made through the Defense Reutilization and Marketing Office (DRMO), a division of the Defense Logistics Agency tasked with managing hazardous waste disposal. DRMO negotiates annual contracts for hazardous waste disposal services and maintains all records and shipping manifests related to disposal activities.

### 3.4.3 Pesticide and Herbicide Usage

The use of chemical toxicants for the control of nuisance species on Pease AFB has been in accordance with Federal and State laws and regulations. Pesticides are occasionally used to control mosquitoes, cockroaches, cluster flies, wasps, bees, ants, fleas, and rats. The pesticides commonly used are Carbamate, Cypermethrin, Diazinon, Dursban, Ficam-W, Rodenticide, Vectobac-G, and Malathion. Most usage has equalled less than 3 pounds per application.

The herbicide Roundup is infrequently used around transformers to prevent a potential fire hazard. Fungicides have been used on the golf course. In the past, some fungicides have been mixed and rinsed from application machinery over a storm drain.

The chemical toxicants have never been detected in the base water supply wells. Testing for these toxicants is not required by current base NPDES-permit conditions, but pesticide testing has been done on occasion in the past.

### 3.4.4 Radioactive Materials

Currently, there are six radiation sources at Pease AFB which contain radioactive material; all of these sources are governed by Air Force Radioisotope Committee permits. All six sources are sealed or encapsulated to prevent the release of radioactive materials into the environment and are tested for leakage every 6 months.

One Cesium-137 source, containing 107.5 millicuries, and one Plutonium-239 calibration set, containing 0.0012 millicuries, are used for calibration of radio equipment. The remaining four sources each contain 900 millicuries of tritium and are used in light sources in the FB-111 flight simulator. The simulator is currently undergoing modifications which will eliminate the need for the radiation sources.

### 3.4.5 Lead-Based Paints

Lead-based paints are still being utilized on base for aircraft and vehicle painting in order to meet military specifications and are applied in accordance with Air Force Technical Orders. The percentage of lead content in most paints used is less than 10 percent.

Actual surveys for lead content in paint were conducted in the base housing in the early 1980's. These surveys found that a majority of the housing contained lead-based paint. It is therefore probable that lead-based paint has been used in many of the buildings on Pease AFB.

In 1981, a health awareness letter was distributed basewide regarding the prevention of ingestion of paint chips by children. A policy of promptly repairing chipped surfaces was also implemented.

### 3.4.6 Asbestos

It is Air Force policy to remove asbestos at its facilities when it poses a threat to release airborne asbestos fibers and it cannot be reliably repaired or isolated. When there is no compelling mandate to remove asbestos, decisions to remove rather than repair damaged friable asbestos materials are based on degree of risk to facility occupants, use of facility, feasibility of repair, frequency of repair and cost-effectiveness. When safety and budgetary considerations permit, complete removal of asbestos-containing materials is desirable and is included in planning operations and maintenance and military construction program facility projects. Asbestos-containing materials are also to be removed at opportune times during minor construction or repairs.

In compliance with this policy, asbestos has been removed at Pease AFB from all or parts of several buildings including the nursery school, officer's club, NCO club, chapel 2, and several dormitories. The types of asbestos removed were pipe insulation, floor tile, and wallboard. Pipe insulation containing asbestos in the mechanical rooms of 51 buildings has also been removed. The detailed Air Force policy on management of asbestos at closing bases is presented in Appendix G.

A building survey for asbestos was completed in March 1990. In dormitories surveyed, asbestos occurs in wallboard and floor tile. In other buildings surveyed, the majority of the asbestos occurs in wallboard and floor tile, but it also occurs in smaller quantities in pipe insulation, ceiling tile, wall tile, air cells, fume hoods, soffits, and siding. All of the buildings surveyed and found to contain asbestos were constructed in the 1955-57 time period, except for the bowling alley which was constructed in 1962. As part of the survey, all friable asbestos that is found is removed or encapsulated by a qualified contractor. The amount of asbestos that has been removed in the past 10 years, including that from the current survey work, is 2,000 square feet of bulk asbestos such as wallboard and tile, 15,000 linear feet of pipe insulation, and 5,000 fittings such as elbows and valves.

### 3.4.7 Solid Wastes Disposal

Approximately 360 tons per month of nonhazardous solid wastes are disposed of off-base through service contracts. This total does not include large household appliances, tree stumps, and construction rubble. Large household appliances are disposed of by the DRMO. Tree stumps and construction rubble are disposed of at state-approved landfills through

separate service contracts. Approximately 332 tons per month of nonhazardous solid wastes are disposed of by incineration at the Maine Energy Recovery Company facility in Biddenford, Maine. The remaining wastes are disposed of at permitted landfills in the local area. All utilized landfills are assumed by the Base Civil Engineering Office to be appropriately permitted. Operations of the utilized landfills in compliance with their permit conditions are monitored by the State of New Hampshire.

Medical wastes are generated on base in a quantity of approximately 215 pounds per day. They are disposed of by incineration on base. An air emissions permit is not required. The incinerator is permitted as a solid waste facility.

Since 1987, sludge created by the base wastewater treatment plant has been placed in an area behind the firing range Building B146, mixed with other organic material such as wood chips and leaves, and then used as loam material where needed on base. Prior to that it was placed behind Buildings B96 or B146 or mixed with loam and spread throughout the industrial area or used on tees and greens on the base golf course.

State regulations require testing of sludge for metals prior to disposal. The past two yearly accumulations of sludge were found to contain levels of cadmium greater than that allowed for land disposal of sludge and less than that which would qualify the sludge as hazardous waste. Extraction process toxicity tests revealed cadmium levels to be less than 0.1 part per million.

The most recent accumulation has been retained on the drying beds, and the other accumulation has been stockpiled in a former landfill that is now an IRP site undergoing further evaluation for other reasons. The landfill is discussed in the following section. The sludge has been mixed with grass clippings and leaves in an attempt to reduce the cadmium levels. Disposal of both accumulations of sludge off-base, and by appropriate method in accordance with applicable State and Federal regulations, is being initiated.

### 3.4.8 Installation Restoration Program

Under this program, areas of actual or potential contamination are assessed, and clean-up strategies are described and implemented in coordination with appropriate Federal and State regulatory agencies. The IRP was originally developed as a four-phase program as follows:

| | |
|---|---|
| Phase I | Problem Identification/Records Search |
| Phase II | Problem Confirmation and Quantification |
| Phase III | Technology Base Development |
| Phase IV | Corrective Action |

As a result of the SARA of 1986, the terminology and procedures were changed. There are now three procedures as follows:

Preliminary Assessment/Site Inspection
Remedial Investigation/Feasibility Study
Remedial Design/Remedial Action

The objectives of the original Phase I were to identify and, on the basis of oral and available written information, assess past disposal sites. The assessment considered whether or not each site posed a hazard to human health or the environment as a result of direct contact, contaminant migration, or contaminant persistence. Phase I was conducted at Pease AFB in 1983. A total of 18 sites were identified and 16 were recommended for Phase II. A PCB spill site and a munitions residual burial site were not recommended for further study because cleanup of contamination at the PCB spill site had already been accomplished and only inert materials were reportedly disposed of at the munitions site.

The objectives of the original Phase II were to investigate the most likely pathways for contamination from a site and to confirm the presence or absence of contamination along those pathways. If contamination was confirmed, the magnitude and extent of it was explored. The results were then quantitatively evaluated.

Phase II was initiated at Pease AFB in 1984 and was completed in 1987. As this phase got underway, 4 additional sites were added to the study for a total of 20 sites. Based on the results of these initial investigations, 13 of the sites were recommended for further investigation in a second stage Phase II investigation. No further investigations or remedial actions were recommended at the remaining seven sites (Roy F. Weston, 1987).

A Phase II, Stage 2, or Remedial Investigation (RI) began in 1987 and is now nearing completion. As this investigation got underway, 7 new sites were added to the 13 sites which were recommended for additional investigation. Results of the investigation for 15 of the sites are currently being compiled and will be available in late 1989 or early 1990. The other five sites were recommended by the consulting investigator in May 1989 for expedited remedial action (Roy F. Weston, 1989a). A work plan for such action was finalized in August 1989 after it was coordinated with the State of New Hampshire. The work plan addresses implementation of interim removal measures; evaluation of the extent of off-site contamination, if any; human health risk and environmental impact assessments; and development of alternatives for long-term remediation. The Remedial Investigation/Feasibility Study (RI/FS) work under this plan is proposed to be completed by May 1991.

On 14 July 1989, Pease AFB was proposed for addition to the NPL for uncontrolled hazardous waste sites in response to the Phase I investigation (EPA, 1989). On 21 February 1990, Pease AFB was determined to meet eligibility requirements of the NPL and to be consistent with EPA's listing policies (EPA, 1990). The effective date of the Pease AFB addition to the NPL was 23 March 1990.

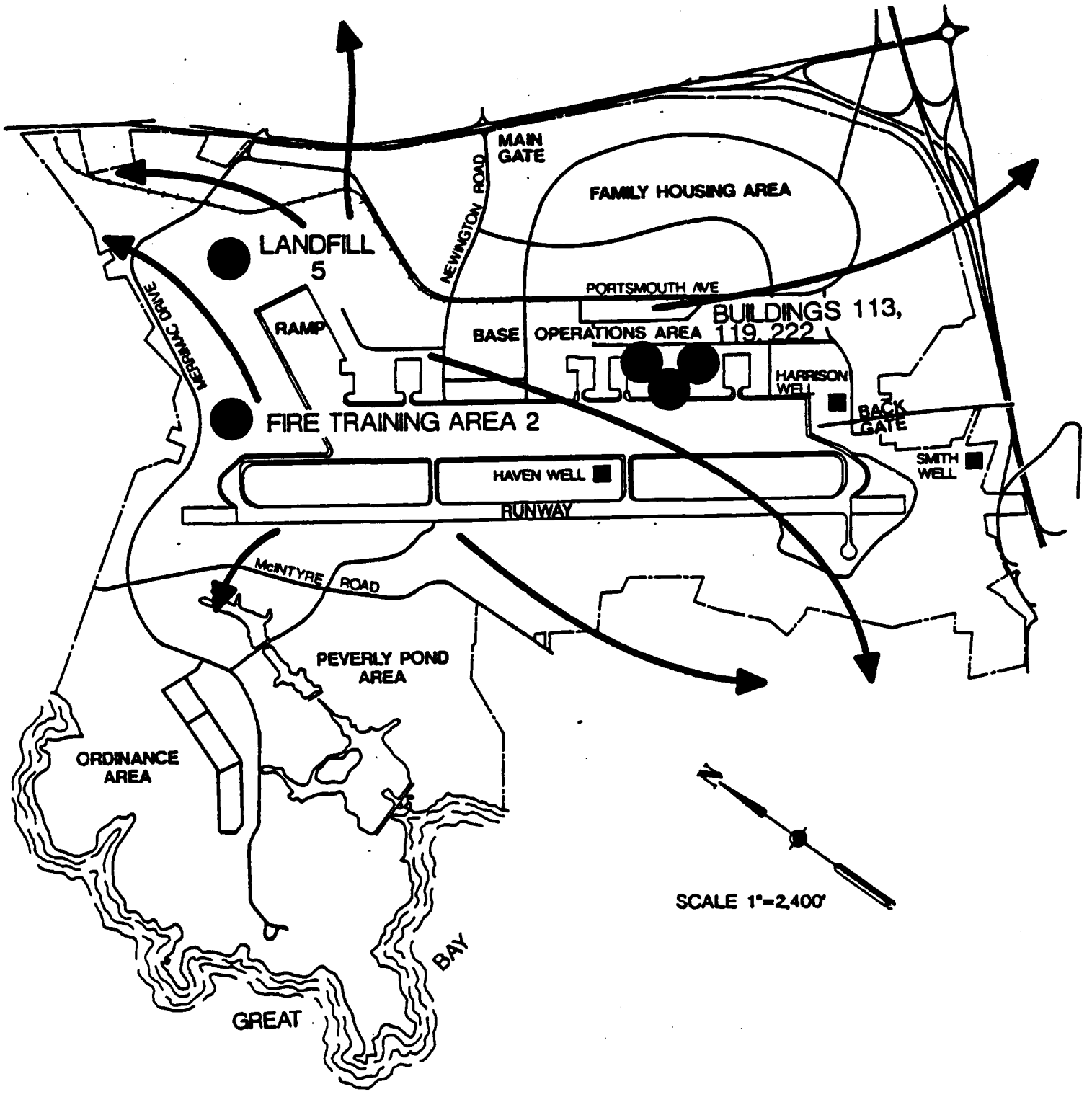
The primary purpose of the NPL is to identify for the public those facilities which appear to warrant remedial actions. The list is used by EPA as an information and management tool. The initial identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the public health and environmental risks associated with the site. In response to this listing, the Air Force will soon begin negotiating an interagency agreement with EPA and the State of New Hampshire which will specify future procedures for all IRP activities. The agreement is expected to be prepared by early 1990. The agreement may require that changes be made to the aforementioned work plan.

Appendix H presents the location and a brief description of all the IRP sites. The five sites recommended for expedited remedial action are listed in table 3.4.8-1 and discussed below. Their locations are shown in figure 3-1. Much more detailed discussions of the sites can be found in the previously cited references and in the references listed in Appendix H.

Table 3.4.8-1
IRP Sites Recommended for Expedited Remedial Action

| Site Location | Site Description |
|---|---|
| Landfill 5 | Former municipal-type landfill containing some construction and industrial-type wastes |
| Fire Department Training Area 2 | Former fire training area |
| Building 222 | Drainage associated with jet engine test cell |
| Building 113 | Former waste TCE storage tank site |
| Building 119 | Drum storage and spill area associated with jet engine maintenance |

Landfill 5 is 23 acres in size. Test pits excavated at the site encountered from 1 to 10 feet of refuse. Buried drums mixed with construction rubble are present in an area of up to 1 acre. Ground water




LEGEND:

- CONTAMINATED SITES
- MAJOR WATER SUPPLY WELLS
- GENERAL GROUNDWATER FLOW DIRECTIONS

**CONTAMINATED SITES AND GROUNDWATER FLOW DIRECTIONS**

**PEASE AFB CLOSURE EIS**

**FIGURE 3-1**

beneath the landfill occurs primarily in bedrock at shallow depths and, secondarily, within the overburden materials and refuse. Arsenic and benzene have been found in this ground water at concentrations exceeding the EPA maximum contaminant level (MCL). Additional wells have been planned to be drilled to monitor and define ground water contamination. Drum removal has been identified as an interim remedial measure.

The former fire training area is 10 acres in size. Prior to 1971, Air Force policies permitted the use of waste fuels, oils, and solvents (including chlorinated solvents) in fire training exercises and such exercises were a principal method of disposing of such materials. Since 1971, only clean or water-contaminated jet fuel (JP-4) has been authorized for use in fire training exercises. Use of the area has now been discontinued. Bedrock beneath the site ranges between zero and greater than 40 feet and indications are that the bedrock may be a significant ground water flow unit. Arsenic, iron, manganese, TCE, trans-1,2-dichloroehtene, benzene, toluene, xylenes, 1,4-dichlorobenzene, phenols, and lindane have been found in the ground water at concentrations exceeding the EPA MCL. Contaminant plumes have been detected, but because downgradient monitoring points are limited, the extent of the plumes in both bedrock and overburden have not been determined. Interim remedial measures identified include ground water extraction, treatment, and recharge and contaminated drainage ditch sediment/soil removal for off-site disposal.

Building 222 is a Jet Engine T  Cell. Drainage from the building is to a drainage ditch east of the building, which is the area of concern. Petroleum hydrocarbons were detected in soil samples that exceeded background concentrations. Ground water was encountered at the site at depths from 2 feet to 9 feet. Benzene, methylbenzene, xylenes, napthalene, 2-methylnaphthalene, and total petroleum hydrocarbons have been found in the ground water at concentrations exceeding the EPA MCL. Two additional bedrock wells are planned to be drilled and used along with an existing bedrock well to monitor the ground water. Further investigations of the extent of contamination have been determined necessary.

Building 113 is the Avionics Maintenance Squadron building. The area of concern is the former underground waste TCE storage tank area next to the building. Nearby is Building 119, the Jet Engine Maintenance Building. The soil in the drum storage area behind the building is visibly stained. In the area between Buildings 113 and 119, 6 more overburden wells and 3 more bedrock wells are proposed to be drilled for a total of 10 overburden and 4 bedrock wells for use in evaluating ground water contamination. Bedrock beneath the area ranges from 23 to 45 feet in depth. TCE and vinyl chloride have been found in the ground water at concentrations exceeding the EPA MCL. Contaminant plumes of TCE and vinyl chloride have been interpreted to occur in the vicinity.

The buried drums from Landfill 5 will be excavated, categorized, and containerized for off-site disposal. During excavation activities, stained soils will be separated, stockpiled, and covered with polyethylene sheeting. After characterization, contaminated soils will be properly disposed of. At the conclusion of excavation, the site will be enclosed with cyclone fencing to limit access until final remediation is complete. Staging areas will be level and lined with polyethylene sheeting. The temporary storage facility for the drums will be a pole barn structure without walls but with a concrete block dike surrounded by hurricane fencing.

At the Fire Training Area 2, a maximum of 300 tons of drainage ditch soil contaminated with petroleum hydrocarbons will be excavated, loaded into transport vehicles, and hauled to an approved disposal site. To prevent surface ponding, the area will be regraded. This same interim remedial action will be performed in the portion of Newfields Ditch west of Dover Avenue, which has been contaminated with petroleum hydrocarbons from Building 222, a Jet Engine Test Cell. It will also be performed in conjunction with the excavation of an overflow pipe that had been connected to the underground waste TCE storage tank next to Building 113. These three excavations will involve over 1,000 tons of soil.

These interim removal measures will contain, isolate, and remove the most contaminated known soils on Pease AFB land, which is considered to be a significant beneficial effect on the soil resources of Pease AFB lands. These measures are not considered as activities of closure; rather, they are continued activities of the Air Force's IRP.

The contaminated soil cleanup activities will also prevent further ground water pollution. Interim removal measures planned that specifically relate to ground water cleanup are as follows.

In the fire training area, up to four wells will be installed for ground water extraction. The water will be delivered to a pilot treatment system involving the following five processes: gravity oil/water separation, oxidation, filtration, air stripping, and carbon adsorption. In accordance with a ground water discharge permit, the water will then be discharged to a ground water recharge trench system consisting of perforated plastic pipe drains. This pilot system will be operated for a period of 1 year.

A similar 1-year pilot treatment system involving five wells will be operated in the area of Buildings 113, 119, and 222. The processes of filtration, air stripping, and carbon adsorption will be used. The treated water will then be discharged into Newfields Ditch or to a nearby

sanitary sewer in accordance with an NPDES permit. Actions that will be taken following the year of operation of these pilot systems have not yet been determined.

Risk assessments of the five sites will be performed within the next 3 years to determine whether actual or potential harm to public health or welfare and the environment is posed. The risk assessments will consist of five components: contamination assessment, environmental fate and transport assessment, exposure assessment, toxicity assessment, and risk characterization.

The exposure assessment will identify the potential or actual routes of exposure, characterize the population exposed, and determine the extent of exposure. The toxicity assessment will identify the toxicological properties of the contaminants. The risk characterization will present a qualitative description of potential adverse effects and an estimate of risk to public health and the environment based on existing guidelines and standards.

The staging and storage areas for the drum removal from Landfill 5 are expected to be located in a graveled and grassed area. The drum excavation area is overgrown with a mix of tree and shrub species. Wetlands occur in the area, and their disturbance will be coordinated with the State of New Hampshire.

IRP activities in the fire training area will affect primarily mowed grassland and some small trees. The drainage ditch excavation near Building 222 is approximately 15 feet wide and exhibits wetland vegetation with woodlands on each side. Less than one-fourth of an acre of each vegetation type will be destroyed. Excavation of the overflow pipe adjacent to Building 113 will occur in a grass/sedge wetland border.

As an IRP activity, specific wetland assessments will be conducted. These investigations will evaluate the possible impacts of environmental contamination. Surveys of aquatic macroinvertebrates will be conducted along gradients of possible contaminant migration. Survey results will be related to contaminant concentrations in water, soils, and aquatic sediments.

## 3.5 AIR QUALITY

Pease AFB is located in Air Quality Control Region 121. This region includes Belknap, Chesire, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan Counties in New Hampshire. The only major pollutant in this region that is in a nonattainment status in the Portsmouth area is ozone. Elevated ground-level ozone concentrations are reported to be an occasional problem in the area when prevailing winds are from the

direction of large cities such as New York, Boston, and Philadelphia. Major pollutants in attainment status in the Portsmouth area are total suspended particulate matter, sulfur dioxides, carbon monoxide, and nitrogen oxides (New Hampshire Air Resources Division, 1989).

The ozone is formed by photochemical reactions between directly emitted nitrogen oxides and reactive organic gases formed from combustion of fuels and from evaporation of organic solvents. Elevated ozone concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in children (New Hampshire Air Resources Commission, 1989).

Estimates of annual air pollutant emissions from various sources associated with current operations at Pease AFB are presented in table 3.5-1. These estimates are based on 1987 data and were made by multiplying a usage factor, such as the amount of fuel consumed, by appropriate emission factors. Emission factors were obtained from the Air Force Occupational and Environmental Health Laboratory (OEHL) Report, Manual Calculation Methods for Air Pollution. These results cannot be directly correlated to health standards, as they do not involve any actual air quality measurements or modeling. Data presented in the Air Force Engineering and Services Center Report, Aircraft Engine Emission Estimator, were used for aircraft operations calculations.

The largest sources of air pollutants are KC-135 and FB-111 aircraft operations accounting for 45 percent of the particulates, 72 percent of the sulfur oxides, 75 percent of the carbon monoxide, 38 percent of the nitrogen oxides, and 77 percent of the hydrocarbons emitted on base. Motor vehicles on the base are also a significant source of carbon monoxide emissions.

Devices on Pease AFB that are governed by a permit from the State of New Hampshire Air Resources Commission are one combustion central heat plant boiler unit and two jet fuel storage tanks. A permit is not required for the other jet fuel storage tank because it has a cone roof and vapor controls. The type of fuel used by the heat plant is No. 2 fuel oil containing no more than 2 percent sulfur. A second boiler unit recently suffered operational failure and was removed in August 1989. The base is authorized by letter to dispose of unusable explosives once a month by burning or open detonation.

## 3.6 GROUND WATER

Ground water typically occurs 5 to 25 feet below ground surface on Pease AFB. The principal overburden aquifers on the base are the Upper Sand and Lower Sand deposits, which merge in the center of the base under the flight line to form a 40- to 60-foot-thick section of saturated,

permeable sand. This is the aquifer supplying the principal base supply wells. In general, some degree of hydraulic connection between units is believed to exist and all are susceptible to water quality impacts from contamination originating on or near ground surface.

Table 3.5-1
Annual Mass Emissions of Air Pollutants
(Tons)

| Pollution Source | Particulates | Sulfur Oxides | Carbon Monoxide | Hydro carbons | Nitrogen Oxides |
|---|---|---|---|---|---|
| Fire Training | 6 | -- | 27 | 15 | -- |
| Heating Oil Combustion | 5 | 5 | 16 | 6 | 74 |
| Surface Coating | -- | -- | -- | 51 | -- |
| Aerospace Ground Equipment Operations | 8 | 1 | 48 | 8 | 107 |
| Fuel Evaporation | -- | -- | -- | 96 | -- |
| Aircraft Operations | | | | | |
| USAF FB-111 | 2 | 2 | 129 | 99 | 29 |
| USAF KC-135A | 3 | 10 | 460 | 348 | 46 |
| NHANG KC-135E | 2 | 4 | 161 | 117 | 26 |
| Transients | 14 | 5 | 138 | 130 | 26 |
| Motor Vehicle Operations | 5 | 2 | 195 | 33 | 30 |
| | 45 | 29 | 1,174 | 903 | 338 |

Source: Pease AFB, Bioenvironmental Engineering Office, 1987 data

The water supply for Pease AFB is supplied by three major wells located on base -- Haven, Smith, and Harrison -- and three smaller wells that service remote sites. The location of the three major wells and general ground water flow directions are shown in figure 3-1. The main wells have pumping capacities of 740, 420, and 225 gallons per minute and are 66, 67, and 46 feet in depth, respectively. There is no surface supply available. The well system was in existence when the base was built as it served the City of Portsmouth. Demand currently runs one-third of the capacity.

In 1977, in response to complaints of the smell of fuel in the drinking water, TCE was tested for and detected in the three main wells. The highest level was 391 micrograms/liter (ug/l) in the Haven well. During the next year, the two wells with the highest concentrations were temporarily shut down until the level of TCE was consistently lower than 280 ug/l as limited by the Surgeon General. This limit, applicable in 1978, is over 50 times the current MCL.

In 1983, the highest level of TCE found in the three main wells was 10 ug/l in the Haven well. In 1985, during the beginning of Phase II of the IRP, TCE was found on two occasions in the Haven well at levels of 3.5 and 7.2 ug/l and was not detected in the other wells. These levels are below the New Hampshire MCL of 75 ug/l, but the higher level exceeded the EPA MCL of 5 ug/l. Quarterly testing from 1987 to 1989 has occasionally detected TCE in the Harrison well at levels ranging from 0.5 to 1.5 ug/l, and has regularly detected TCE in the Haven well at levels ranging from 0.5 to 3.5 ug/l. The declining trend in TCE concentrations indicate that the contamination problem has been lessened by natural processes, cessation of the contributing sources, or movement out of the area. Three water supply wells for the City of Portsmouth are located approximately one-half mile southeast of the base. TCE has not been detected in these wells to date, however (Roy F. Weston, 1989b).

Existing TCE levels in the base water supply are considered to be such that TCE treatment is not required. The water treatment plant that was built in 1985 is designed for chlorination and fluorination and also for TCE treatment through aeration and carbon adsorption. It is noted that as presently constructed, however, the carbon portion of the water treatment plant does not function properly; it was improperly designed for a constant flow and pressure of water.

Phenols and selected metals have been found to exceed EPA maximum concentration levels at localized ground water sampling locations. Iron is commonly and naturally present in the surface and ground waters, and has been detected in excess of the 0.3 mg/l New Hampshire Drinking Water Standard in 17 ground water monitoring well samples. The standard is based on esthetic values. Arsenic has been detected slightly in excess of the State standard in 3 monitoring wells. High arsenic levels occur naturally in the ground in the area.

All required lead sampling of the raw water sources has been below the detection limit. The base drinking water supply system consists of copper piping; however, there is potential for lead to be present in the drinking water because of the lead content of solder used in the piping system and the age of the piping system. Some water fountains on base may have been manufactured by companies that used lead-lined tanks in the coolers. Although not required, high use fountains were specifically

tested in the past and were found to have no detectable levels. Known company stock numbers of fountains with lead-lined tanks were searched for but none were found.

## 3.7 SURFACE WATER

### 3.7.1 Surface Water Features

Pease AFB lies within the Piscataqua River basin. The river drains over 1,000 square miles of southern Maine and southeastern New Hampshire. The river is actually a 13-mile tidal bay and discharges to the Atlantic Ocean. Great and Little Bays, located west and north of the base, comprise a tidal estuary and cover 10 square miles.

New Hampshire classifies its surface waterways according to potential users based on water quality. The tidal areas of the Piscataqua River and the Bays and the streams feeding them are classified as Class B, meaning they are suitable for bathing, recreation, fish habitat, and public water supply after adequate treatment. Discharge of untreated sewage or wastes to Class B waters is prohibited.

Water quality in the tributary rivers feeding the Great Bay has reportedly been degraded because of ongoing industrial and municipal discharges upstream from the area of Pease AFB. Water in the tidal reaches is brackish and is, therefore, not considered as potable water supply. In general, the Great Bay does meet requirements for Class B waters (New Hampshire Department of Environmental Services, 1990). Areas of the Piscataqua/Great Bay estuary have been closed to shellfishing but are generally open to recreational activities such as fishing. Estuaries are highly productive areas for development of aquatic communities, and food chains in these communities are sensitive to manmade contaminants.

In 1987, the U.S. Fish and Wildlife Service, New Hampshire Division of Public Health Services, and New Hampshire Department of Fish and Game (1989) undertook a joint survey of contaminant levels in selected shellfish from the Great Bay estuary. Eighteen locations in the estuary were sampled. The organic contaminants surveyed were polychlorinated biphenyls (PCB's) and polycyclic aromatic hydrocarbons (PAH's). PCB levels in mussels, clams, and sediments were found to be below levels found in other New England locations.

PAH levels in mussels and clams were found to range from below the detection limit to levels higher than those found in other New England locations. The Fox Point location had mussel PAH levels 7.5 times greater than average PAH values in Great Bay mussels. Similarly, PAH levels in clams from four of seven sampling locations were greatly in excess of the

mean value for the three other locations. PAH levels in sediments were found to be similar to those found in other New England locations.

The survey recommended that areas of known PAH contamination be more thoroughly evaluated, especially Fox Point. The survey did not indicate, either directly or indirectly, the extent to which any entity has contributed to the accumulation of organic contaminants. PAH's are ubiquitous in the environment. They may result from natural sources, such as volcanic activity and forest fires. They also result from municipal and industrial effluents, atmospheric fallout, fly ash precipitation, and road and urban runoff. There are 30 entities permitted to discharge effluents into the Great Bay estuary.

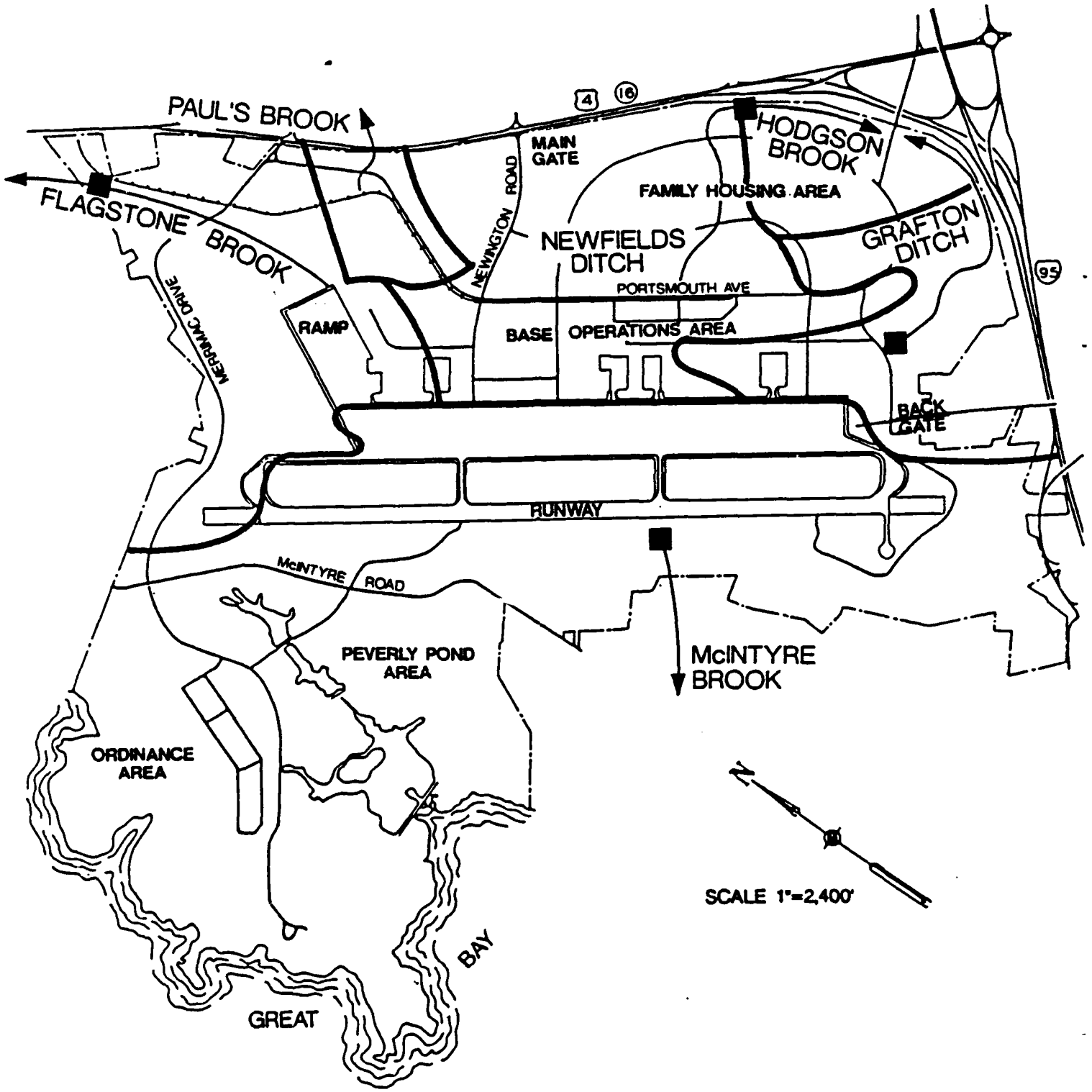
Surface drainage from the base is radial and is illustrated on figure 3-2. Stormwater runoff is collected in an extensive system of catch basins and is directed through subsurface drains to various receiving streams and ditches which ultimately discharge to either Little Bay, Great Bay, or the Piscataqua River.

Flagstone Brook flows in a northerly direction from the north end of the aircraft parking apron at the confluence of two storm drains. It continues north, beneath Merrimac Drive, through a series of concrete check dams and eventually discharges into Little Bay. Paul's Brook drains the bulk fuel storage area and flows northeasterly to discharge into the Piscataqua River.

Hodgson Brook drains much of the eastern portion of the base and flows southeasterly, beneath Interstate 95, and discharges to the Piscataqua River via North Mill Pond in Portsmouth. Newfields Ditch, which is culverted through part of its length, receives overland flow as well as storm runoff from numerous drains in the industrial shop area and through the base housing area. It flows to the east and joins Hodgson Brook just outside the base boundary. Grafton Ditch receives storm runoff from the southeastern section of the industrial shop and housing areas. It flows toward the southeast and also joins Hodgson Brook just outside the base boundary.

IRP investigations have found that sediments from Newfields and Grafton Ditches contained elevated total organic carbon and lead levels and produced an oily sheen on the water when disturbed during sampling. The surface water samples from the same area indicated no contamination problems, and it is likely that contaminants are confined to sediments.

McIntyre Brook receives runoff from most of the runway and aircraft parking apron areas. Low flows are routed through an oil/water separator before flowing into McIntyre Brook. The brook exits the base to the west and flows to Great Bay.




■ PERMITTED OUTFALLS

— DRAINAGE BOUNDARY

**SURFACE DRAINAGE AND PERMITTED OUTFALLS**

**PEASE AFB CLOSURE EIS**

**FIGURE 3-2**

Peverly Brook receives runoff from 50 to 75 primarily forested acres. The water level in Bass Pond, located on the lowermost reach of both Peverly Brook and an adjacent unnamed brook, is maintained predominantly from the outlet of Lower Peverly Pond, although springs and surface runoff from the ordnance area contribute to some extent. The three ponds on base, Upper Peverly Pond, Lower Peverly Pond, and Bass Pond total 57 surface acres and are discussed further in Section 3.9.

Weirs have been installed on some of the base streams to control erosion. The weirs can also aid in the cleanup of spills if such events were to occur.

### 3.7.2 Wastewaters

The Pease AFB wastewater treatment plant for base sanitary wastewaters is a secondary treatment facility which utilizes two high rate trickling filters to treat a design flow of 1.2 million gallons per day. The effluent from the plant is discharged by permit into the Piscataqua River, which is a Class B receiving water according to the New Hampshire Water Supply and Pollution Control Division (WS&PC) classification system. Problems occurred in meeting effluent guidelines during heavy rains, at which time excess flow is directly bypassed into the river because the hydraulic capacity of the treatment system is exceeded. This usually occurs 2 to 3 days in the spring and involves a total of 8 to 10 million gallons of bypassed water. Any bypassed flows are reported to the WS&PC Commission.

In May 1989, permit-required aquatic toxicity tests were performed to determine whether toxic materials existed in effluent from the sewage treatment plant. The effluent was not found to be acutely toxic to aquatic organisms.

Pease AFB has NPDES permit authorization from EPA to discharge runoff to surface waters at four locations as shown on figure 3-2. Discharge limitations by parameter are listed in table 3.7.2-1. A monthly grab sample for TCE, biological oxygen demand (BOD), and flow are also required, but no limitation of these parameters are stipulated in the permit. Six oil/water separators are located at industrial facilities to enable com-pliance with permit limitations. The results of 1986-89 water quality sampling for the four on-base, NPDES-permitted outfalls are presented in Appendix C. There have been occasions when the base has exceeded the surfactant parameter of the permit. These occasions were reported to the State of New Hampshire and EPA. In response, EPA required monthly sampling of permit parameters instead of quarterly sampling. Also, the Base Bioenvironmental Engineering Office studied potential causes and then modified amounts and methods of use of soaps. Appendix C also contains the results of surfactant, oil, and grease sampling of the

three base ponds. Occasionally, these ponds experience an above-normal level of oils and grease, which is suspected of being caused by motorboating activities. Fisheries resources are not known to have been adversely affected by these occasional above-normal levels.

Table 3.7.2-1
NPDES-Permit Discharge Limitations

| Parameter | Limitation |
|---|---|
| Oil/grease | 10 mg/l[1/] (maximum) |
| Surfactants | 0.2 mg/l (average) |
| pH | 6.0 to 8.2 |

[1/] milligrams/liter

## 3.8 PLANT AND WETLAND RESOURCES

Pease AFB is within the eastern deciduous forest province of the United States. Plant communities on base are indicative of the pine/northern hardwood ecosystem. The forest resources of Pease AFB are substantial. More than one-half of the base lands, approximately 2,600 acres, are forested. Stands of commercial timber species comprise more than 25 percent of the total base acreage. Much of the forest land lies on flat terrain underlain with poorly drained soils. Water is close to the surface more than 6 months of the year, which is a major limiting factor in the harvesting of the forest.

### 3.8.1 Plant Resources

Existing forested stands have evolved from a mixture of old farm woodlots, abandoned fields and pastures, and wetlands unsuited for agriculture. The stands are mostly uneven aged and range from seedling/sapling size to overmature, large sawtimber. The wettest sites are dominated by red maple and its associated species. Better drained soils support red oak and other mixed upland species. White pine is found in mixture with both of the above types and also forms pure, even-aged stands on its own. The bulk of the large sawtimber is of poor form and low quality.

Interspersed with the commercial forest land are areas in an old field successional stage. Typical trees occurring in these areas are mixtures of juniper, red cedar, aspen, gray birch, black cherry, sumac,

and other pioneer species. Nearly 1,000 acres of base lands contain abandoned field and grassland habitat. There is one 20-acre field suitable and available for cropland management. This area is being used for the production of hay.

Reforestation was performed on 29 acres in 1972 using red pine and white spruce, but the plantings are still too young to contribute volume or value except as Christmas trees. In 1973, the University of New Hampshire was allowed to plant hybrid white pine seedlings on 38 acres for genetic research. Growth rate, disease, and other factors are recorded each year. Approximately 30 acres of the plantings have been determined not worthy of future study due to high mortality.

There has been a great amount of selective thinning of damaged or inferior hardwoods over the past several years, primarily for firewood. The base firewood cutting program is a popular one as many homes subsidize heating costs by burning wood.

### 3.8.2 Wetland Resources

A wetlands and soils map was developed by the Soil Conservation Service for the base in 1982. Approximately 300 acres were designated as wetlands and were defined as having poorly drained or very poorly drained soils. The freshwater wetlands are significant in that they act as ground water recharge areas returning freshwater to the underground aquifer under the base. The coastal wetlands along Great Bay contribute to the delicate balance of the entire estuarine system. The mudflats off of the southern portion of the base are some of the most productive oyster beds in the bay. With proper licenses, base residents enjoy shell fishing for clams and oysters.

In cooperation with the State of New Hampshire, the NOAA designated the Great Bay area as a National Estaurine Research Reserve in October 1989. The reserve boundary includes 300 acres of Pease AFB consisting of primarily woodland shoreline area. The State of New Hampshire's Department of Fish and Game will administer the reserve. In developing a management plan for the reserve, the State has entered into a Memorandum of Understanding with Pease AFB for limited access onto the base for research and education activities.

## 3.9 FISH AND WILDLIFE RESOURCES

Of the more than 4,300 acres of land of Pease AFB, some 2,600 acres are utilized for fish and wildlife management. Hunting and fishing are the most popular uses of the fish and wildlife resources. Many people also enjoy bird watching, nature study and photography, and observation of wildlife while hiking and camping on base. The lands support a wide

of wildlife while hiking and camping on base. The lands support a wide variety of habitat types which support a diverse community of wildlife. There are 6.5 miles of saltwater shoreline and 57 acres of freshwater ponds for fishing.

### 3.9.1 Fishery Resources

There are no streams of any fishery significance on Pease AFB. However, there are three freshwater ponds, totaling 57 surface acres, located on the base. These are Upper Peverly Pond (8 acres), Lower Peverly Pond (5 acres), and Bass Pond (44 acres). All three ponds contain warmwater fish species such as large-mouth bass, yellow perch, and chain pickerel. To provide an early season trout fishery, the ponds are stocked each spring with catchable brook and rainbow trout from State hatcheries. The ponds are open to fishing to active and retired military personnel, permanently employed civilians working on-base, and others who are permitted access to the base.

Bass Pond was constructed in 1963 when an area of the Great Bay marsh was diked to provide mosquito control by preventing tidal flooding. The dike was later increased in height to increase the depth of water in the impoundment to a point which would support a large-mouth bass population. The pond provides excellent opportunities for catching large-mouth bass in the 5- to 10-pound weight class.

Weed growth and algal blooms in Bass Pond are a recurring problem. Construction of a fish ladder for migration of alewife forage fish from Great Bay has been identified as a needed fish habitat improvement project.

Upper and Lower Peverly Ponds provide good fishing for warmwater species during the summer and for trout during the spring and fall. Both ponds have been stocked with catchable brook and rainbow trout and are on the New Hampshire list of trout ponds. The dam separating the ponds needs structural repairs, both to the spillway and to the embankment.

### 3.9.2 Wildlife Resources

Important wildlife species occurring in the mixed forest habitat on base are deer and gray squirrels. The current deer population size is 12 to 15 and has been as high as 16 to 25 in the past. Because of past and potential deer conflicts with aircraft, the species has only been managed for status quo. The habitat condition for deer is good as the forest lands are largely immature hardwoods interspersed with open areas and old farmland. The habitat condition for gray squirrels is also good, and the trend is upward as trees become older, greater amounts of mast become available, and the number of densites increases.

Important wildlife species occurring in the abandoned field and grassland habitat on-base are cottontail rabbit, woodcock, bobwhite quail, and pheasant. Although there are abundant areas of old fields on base which offer good habitat for rabbits, the trend is downward as tall shrubs and tree species continue to invade field areas. An effort has been made to slow down plant succession by mowing in an attempt to retain a good proportion of grasslands, shrublands, and woodlands. These efforts also aid in maintaining the upland game bird habitat and species. Because pheasants do not have significant natural reproduction in the area, they are stocked annually by the base.

The tidal coastline and ponds on base offer good resting and feeding habitat for migratory waterfowl. In fact, the USFWS believes the preservation of this habitat would constitute a significant contribution to waterfowl conservation efforts in the United States.

A number of wildlife habitat improvements have been implemented by the base over the years, and a number of improvements have been planned. Examples are the construction of wood duck nest boxes, wildlife food plots, fruit tree pruning, mowing, creation of brush piles, and selective timber harvest that preserves den trees and mast-producing trees. The most important improvement has probably been the mowing to slow down plant succession and maintain habitat and species diversity. A most important planned improvement was to inventory all abandoned fields and develop a 10-year mowing schedule.

## 3.10 ENDANGERED, THREATENED, AND SENSITIVE SPECIES

Pease AFB provides important habitat for two endangered species: the bald eagle, which is federally and State listed, and the upland sandpiper, which is State listed. Great Bay is New Hampshire's most significant bald eagle wintering area and has supported an average of 10 eagles during the last five winters (Audubon Society of New Hampshire, 1989). The estuary is also an historical bald eagle breeding area and has excellent potential for a breeding pair as regional popula-tions recover. The 3.5 miles of Pease AFB shoreline from Welsh Cove to Fabyan Point constitute a key component of Great Bay's eagle habitat. As the largest stretch of undeveloped shoreline on the Bay, it provides a network of perch trees, a night roost area, and important foraging habitat free of human disturbance and critical to the wintering eagle population.

In 1987, Pease AFB entered into a Wintering Bald Eagle Management Agreement with the USFWS, the New Hampshire Fish and Game Department, and the Audubon Society of New Hampshire. Pease AFB primarily agreed to curtail wintertime recreational use and other human activity in the eagle wintering area along a portion of the base shoreline.

The only currently known nesting population of upland sandpipers (Bartramia longicauda) in New Hampshire is located on Pease AFB (Audubon Society of New Hampshire, 1989). The sandpiper occurs in managed grassland habitats and nests in the 800- by 11,320-foot grassland strip between the runway and apron. The breeding population at this site was estimated at 7 pairs in 1989 and produced an estimated 10 fledged young (Audubon Society of New Hampshire, 1990). Further, the 1989 Audubon Society field studies documented the previously unrecognized importance of the grassland habitat on the airfield to the regional upland sandpiper population during the post-breeding migration period. Migrants began to swell this population by mid-July and were present until late August. Surveys documented consistent counts of 30 to 60 sandpipers from 13 July to 22 August. The species is rare, endangered, or of unknown status throughout New England; therefore, any remaining habitat is considered critical to the regional population.

In 1982, a coastal zone funded study inventoried coastal endangered plants; however, the study did not include Pease AFB property. Based on the Nature Conservancy's knowledge of the biota of the surrounding area, it is expected that occurrences of other rare animal and plant species and natural communities of statewide and national significance are present at Pease AFB. An inventory of such resources will be conducted in the near future in preparation of the Pease AFB Disposal EIS.

## 3.11 VISUAL AND ESTHETIC RESOURCES

The overall appearance and visual quality of the base is esthetically pleasing. The majority of base roads have been completely rebuilt, including new granite curbing. The exterior of all base buildings have been recently repainted. New street trees have been planted along most base streets. Major new building projects, such as the recently completed two-story Civil Engineering complex, have been accomplished with brick to complement some of the original brick buildings on base.

There have been numerous landscape planting projects accomplished at many facilities on-base. Noteworthy are the extensive site improvements around five base dormitories. New roadways; parking lots; walkways; lighting; landscape plantings; and furniture, benches, and sodding have been recently accomplished to promote a campus atmosphere.

The undeveloped areas on-base support numerous recreational activities, especially in the over 2,000 acres of forested woodlands. Forestry practices have provided improvements for outdoor recreation, wildlife, and the forest. A series of woodland trails permits many pleasing observations of the landscape. New roads which have been constructed in recent years in conjunction with the firewood cutting program

provided a needed link in many areas to complete sections of specific trails. There are 16 miles of designated trails on-base.

Along the Great Bay shoreline area of the base, there are several scenic overlooks. The Woodman's Point and Thomas Point peninsulas offer spectacular views to the bay. Other vantage sites are from the Sportsman Club and the Bass Pond causeway. Each area has its own unique perspective to the Great Bay estuary environment.

## 3.12 HISTORIC RESOURCES

In order to determine the type and extent of the historic resources located at Pease AFB, contacts were made with the members of the SHPO staff. With their assistance, records at the New Hampshire Division of Historical Resources (NHDHR), including information on known prehistoric and historic resources in the vicinity of Pease AFB, were examined. An important source for information on the historic era is the book Newington New Hampshire: A Heritage of Independence Since 1630 by Captain John Frink Rowe. Pease AFB records, conversations with the base staff, and a site inspection also contributed to the following discussion of historic properties. The land for Pease AFB was acquired by the DOD in the early 1950's, and there are no earlier standing military structures on the base (Eckert, 1980). Several houses from the late 1940's or early 1950's remain on-base by the southeast gate.

The old Newington School, which was built in 1921, was acquired by the base in 1958 due to aircraft noise. The school is a symmetrical split level building with a slate hip roof. It is constructed of native cobblestone from the stone walls of older Newington farms and lumber from the town forest. It is part of the Newington Center Historic District, which was included in the National Register of Historic Places (NRHP) in 1987. The base has also acquired and cleared a substantial portion of the town forest. The forest, which has the reputation of being the first in the State, was originally part of the common ground set aside in 1640 (Mausolf, 1987). The forester hired by the base has obtained old maps which delineate more accurately the boundaries of the portion of the town forest acquired by the Air Force. Based on these maps and a field check by base personnel, it appears that 75 acres of the originally acquired 100 acres remain forested.

The only other standing historic structures on the base are associated with the Loomis estate and consist of the main house, currently used as a sportsmen's club; a caretaker's house; and a concrete-capped well. The main house was built by Richman S. Margeson toward the end of the last century and was then acquired by the Hawkridge family (Rowe, 1987). The main house is a two-story, wood-frame structure with a hip roof with dormers. The front of the house has a columned porch and a covered drive.

The back of the house has a one and one-half story addition with a small, one story flat-roofed addition on the very end. Based on a brief site inspection, James L. Garvin, an architectural historian on the staff of the NHDHR, dated the main house to about 1890 with modifications dating to about 1910. It appears that these structures were also built by Margeson.

Although there have been some post-1950 alterations to the interior of the main house, Mr. Garvin believes it to be potentially eligible for inclusion in the NRHP. The caretaker's house appears to date from the early 20th century and should be included in the nomination as a surviving part of the extensive complex of buildings that originally made up the Loomis estate. The context of summer estates dating to the late nineteenth and early 20th centuries will be one context pursued as the nomination to the NRHP is pursued by Mr. Garvin, who is currently under contract to clearly document which aspects make the structures significant.

Pease AFB has not yet been surveyed for historic or prehistoric archeological resources, but a survey is planned in conjunction with the preparation of the disposal/reuse EIS. This survey will be coordinated with the New Hampshire SHPO. An 1805 map, provided by the NHDHR shows a ferry landing and two houses within the current boundary of the base. Furber Point is named for the operators of the ferry who owned the land as early as 1652 (Rose, 1987). The Gerrish Furber house, built in 1794, was destroyed when land for Pease was acquired. Approximately two dozen structures are identified on an 1851 map. In the late 1800's, water from Peverly Brook was pumped to Portsmouth for use in the Frank Jones Brewery.

It has also been reported that there were numerous brickyards in the area, including one at Welsh Cove just north of the base. Brick fragments have been reported on the base just south of the cove and may be related to either another brickyard or an early structure (NHDHR, no date). The area was first settled by Europeans in the early 1600's, so it is possible that there are historic remains on the base eligible for inclusion on the NRHP.

No prehistoric sites have yet been reported within the base boundary. Based on previous research in similar coastal zones and the Great Bay area, the presence of freshwater springs within the current boundaries of Pease AFB would have made it an attractive location for prehistoric populations (Brummer and Chelsey, 1980). Sites located in the vicinity of the base serve as examples of what might be found on the base when it is surveyed. A middle Archaic site dating between 6000-4000 B.C. has been recorded north of the base along the Little Bay coast. Across Furber Strait from the base, refuse from prehistoric use of shellfish has been recorded at several sites. One of these sites contained Woodland pottery

dating from 1000 B.C.-A.D. 1600. Another of these sites was located 30 to 40 centimeters below the surface of the ground. These sites are relatively small and the buried site indicates that they may be relatively difficult to locate. However, they provide important information about prehistoric subsistence and settlement patterns. Early settlers in the region of Pease AFB traded with and were attacked by Native Americans living in the immediate area.

## 3.13 SOCIOECONOMICS

Socioeconomic factors are briefly discussed below to provide a more complete description of the environmental setting. The discussion includes identification of an impact area, discussion of the area economy, and discussion of the area population.

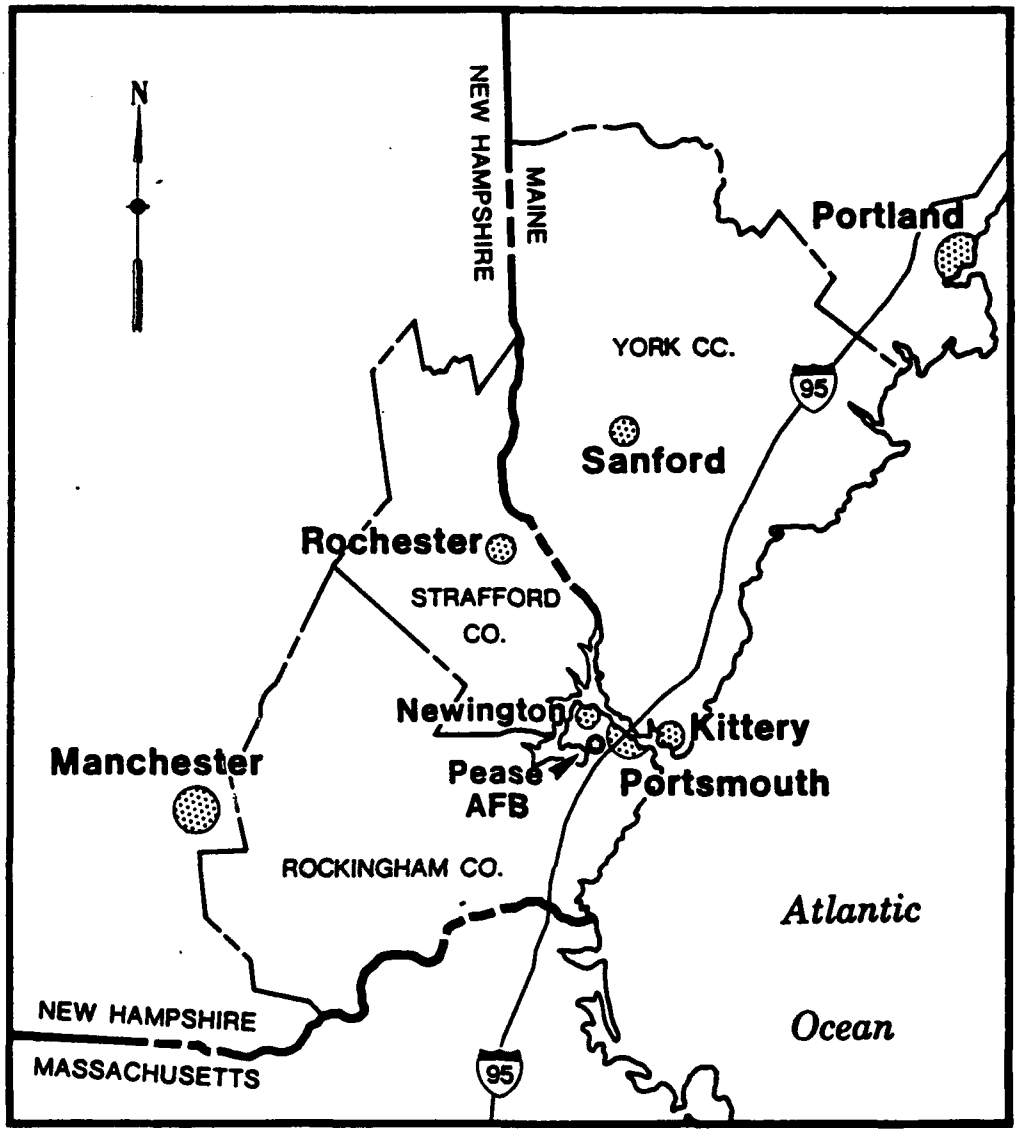
### 3.13.1 Impact Area

The operation of Pease AFB affects the economy and socioeconomic factors in a three-county area and in nearby communities, including the adjacent communities of Portsmouth and the town of Newington. The three county impact area is shown in figure 3-3 and includes Rockingham and Strafford Counties in New Hampshire and York County in Maine. The effects of closure and reuse are difficult to assess until a reuse plan is approved. The potential for significant socioeconomic impacts cannot truly or accurately be assessed until potential benefits for reutilization can be identified and quantified. These benefits then can be measured against closure effects to determine the overall impacts. These analyses will occur in conjunction with the reuse EIS as described in section 4.11 on page 4-9. Meanwhile, the Air Force is working closely with the OEA to minimize any negative effects of base closure.

### 3.13.2 Area Economy

Until recently, the area economy has experienced strong growth. As shown in table 3.13.2-1, total employment for the three-county area increased from 122,545 to 189,183 employees between 1977 and 1986. This increase of 66,661 jobs reflects an annual growth rate of 5.0 percent. This compares to an annual rate of 2.2 percent for the Nation and a growth rate of 2.8 percent for the New England region during the same period.

Through 1986, area economic growth had been strong in all important sectors. However, retail trade and services accounted for slightly more than one-half of the total job development. Very strong growth was also experienced in contract construction, manufacturing, transportation and utilities, wholesale trade, finance, insurance and real estate, and government. The remaining three sectors of farm workers; agricultural




0 5 10 20

Scale in Miles

ECONOMIC IMPACT AREA

PEASE AFB CLOSURE EIS

Figure 3-3

services, forestry, fishing, and other; and mining contributed slightly to overall growth and accounted for less than 1.0 percent of the increased number of jobs.

Table 3.13.2-1
Employment Growth in the Impact Area
1977 to 1986

| Industry | 1977 Employment | 1986 Employment | Growth Employment | Growth Percent |
|---|---|---|---|---|
| Farm Workers (BEA 1977) | 2,293 | 2,384 | 91 | 4 |
| Ag Services, Forestry, Fishing & Other | 265 | 639 | 374 | 141 |
| Mining (Approximate) | 33 | 60 | 27 | 82 |
| Contract Construction | 4,509 | 10,302 | 5,793 | 128 |
| Manufacturing | 32,468 | 39,252 | 6,784 | 21 |
| Transportation & Other Public Utilities | 2,940 | 7,295 | 4,355 | 148 |
| Wholesale Trade | 3,652 | 7,094 | 3,442 | 94 |
| Retail Trade | 22,550 | 40,167 | 17,617 | 78 |
| Finance, Insurance, and Real Estate | 3,495 | 8,788 | 5,293 | 151 |
| Services | 15,139 | 31,325 | 16,186 | 107 |
| Government (BEA 1977)[1/] | 35,201 | 41,877 | 6,676 | 119 |
| TOTAL | 122,545 | 189,183 | 66,638 | 54 |

1/ Bureau of Economic Analysis
Source: National Planning Data Corporation, Enhanced Business Patterns, 1986. Derived from Bureau of the Census County Business Patterns, 1986.

The impact area had experienced very low unemployment rates until recently. In 1986, the annual average unemployment rate was 3.5 percent. This level dropped to 3.1 during 1987 and averaged 3.0 percent during the first half of 1988. The lowest level recently recorded was 2.1 percent for June 1988. Since that time, the previous high level of economic growth and job development have ceased and some job losses have been reported. By June of 1989, area unemployment had increased over one percentage point to 3.4 percent. In the following 6-month period, it increased an additional percentage point to a level of 4.4 percent, recorded for December 1989. Income for major industrial classifications in the area total over $3.2 billion in 1986.

### 3.13.3 Population

Population Growth. Population growth has occurred in the three-county area during recent years and is projected to continue. The area experienced an annual average population growth of 2.6 percent between 1970 and 1980 and 2.0 percent between 1980 and 1988. The total population for all three counties was estimated to be 415,419 in 1988 and is projected to grow at an annual average rate of 1.6 percent through 1993. Rockingham County in which Pease AFB is located has the highest population and has experienced the most rapid growth rate. Between 1970 and 1988, the population of Rockingham County has grown by 89,928 persons which constitutes 54 percent of the total population growth in the three-county region. Rockingham County is projected to continue leading the area's growth through 1993 although the recent economic downturn may well result in shortrun population projections not being met.

## 3.14 GOVERNMENT SERVICES AND FINANCE

Local governmental services in the three-county area are primarily provided by town and city governments. Services provided at this level include police and fire protection, community development, and sewage treatment and disposal. Other services include parks and recreation, libraries, local streets and highways, and local public schools.

Two local government services could be directly impacted by the closure of Pease AFB. These are educational services provided by the Portsmouth school system and rescue efforts and fire protection which are provided by communities in the seacoast area.

### 3.14.1 School Buildings

Two schools, Brackett and Jones Elementary Schools, which are used by the Portsmouth school system are located on Pease AFB. These buildings are owned by the U.S. Department of Education. Only one of the schools is fully utilized for educational purposes. Brackett Elementary School had 568 students in September 1989 (Portsmouth City School System Fall Report, September 1989). These included students in grades first through sixth. Jones Elementary School is used for an early childhood learning program and kindergarten. In September 1989, Jones School had 42 learning program students and 163 kindergarten students. The Jones Elementary School building is also used by the Air Force. It contains the on-base housing office.

### 3.14.2 Fire Fighting and Rescue Assistance

The base currently provides backup fire fighting and rescue assistance to surrounding communities. Base assistance is especially valuable in fighting gasoline or other types of fuel fires. The base has aqueous film foam capability used in fighting these types of fires and is the only department in the area able to control and extinguish incidents involving large quantities of flammable liquids. The base rescue crew has provided emergency medical services and vehicle extraction services to most surrounding communities. The department has also responded to several hazardous materials incidents within the area.

## 3.15 SERVICES FOR RETIRED MILITARY PERSONNEL

Retired military personnel in the vicinity have base privileges. These include base exchange privileges, commissary privileges, medical treatment on a space available basis, and access to recreation facilities. Military and Coast Guard retirees living in southern Maine, northeastern Massachusetts, and most of the State of New Hampshire would be likely to use one or more of the facilities at Pease AFB. In 1988, there were about 14,300 military and Coast Guard retirees living in this area.

## 3.16 OUTDOOR RECREATION

A wide selection of outdoor recreation activities are provided at Pease AFB for those who have approved access to the recreation facilities. Recreation activities at the base include camping, swimming, picnicking, hiking, golfing, hunting, fishing, boating, cross-country skiing, and snowmobiling. Important base recreation facilities include Upper and Lower Peverly Ponds and the associated recreation area; Bass Pond; Woodman's Point; the Sportman's Club; the golf course; and various off-road vehicle, hiking, and nature trails. The area near the three ponds is the most utilized for recreation purposes. It provides opportunities for swimming, picnicking, camping, and fishing. Fishing and hunting activities are popular, with approximately 800 permits sold annually. Both activities are enhanced through management of wildlife. Peverly Ponds have been stocked in recent years with trout. The base stocks appropriate wildlife areas with pheasants annually.

### 3.16.1 Recreation Use

Recreation activity on the base for the year 1987 is presented in table 3.16.1-1. The most popular activity listed on the table is picnicking, which accounted for 46 percent of the total activity. Fishing is second with 19 percent, followed by water sports with 17 percent and hunting with 7 percent. Three of these four activities can be pursued at the Peverly Ponds recreation area. Together these four activities account

for 89 percent of the total. Camping and winter sports account for the remaining 11 percent of outdoor recreation. Winter sports include ice skating and cross-country skiing. More recent information is available for golf course use. In FY 1989 (1 October 1988 to 30 September 1989), a total of 32,814 rounds of golf were played at the base golf course (Pease AFB FY 1989 Golf Course operation report). It is noted that the golf course activity is reported in "rounds" whereas other outdoor recreation activity is reported in visitor days.

Table 3.16.1-1
Outdoor Recreation Activity
1987

| Recreation Activity | Visitor Days FY 87 | Percent of Total |
|---|---|---|
| Hunting | 600 | 7 |
| Fishing | 1,704 | 19 |
| Camping | 400 | 5 |
| Picnicking | 4,000 | 46 |
| Winter Sports | 500 | 6 |
| Water Sports | 1,500 | 17 |
| Total | 8,764 | 100 |

Source: Pease AFB Civil Engineering Office, 1989.

## 3.16.2 Recreation Facilities

Access to recreation facilities is limited because of base security requirements. The general public is not allowed on-base for recreational purposes. Persons with access to the base including military employees and their dependents, permanently employed civilians working on-base, guests, retired military personnel, and others who are permitted access to the base are allowed use of the base recreational facilities.

## 3.17 NOISE

Although improvements have been made in recent years, modern jet aircraft still generate high levels of noise. Jet aircraft noise is most likely to cause problems during takeoff, landing, and while running up or testing aircraft engines. The presence of high noise levels and high average noise levels affects the suitability of affected land for different types of uses. The Air Force promotes land use development compatible with air installation operation by providing guidance and

recommendations concerning land use development to local jurisdictions having land use planning and regulatory responsibilities and authorities. The local jurisdiction is encouraged to adopt regulations limiting development in noise and air-accident potential zones (APZ) to compatible uses.

An AICUZ report was prepared for Pease AFB in 1987. This report described the noise and accident potential conditions existing at Pease AFB in 1985 and made recommendations regarding future land use developments. Copies of the report were distributed to affected cities and towns.

The current aircraft operations at Pease AFB are essentially the same as those used in the preparation of the 1987 AICUZ report. For this reason, the noise levels presented in that report were used as the baseline for assessing the impacts of both the force structure change, resulting in the FB-111 aircraft withdrawal, and the base closure.

### 3.17.1 AICUZ Program

The Air Force developed the AICUZ program to minimize the effect of flying operations on land within the AICUZ area to prevent incompatible development in areas with high accident potential and/or high noise levels and to maintain operational capability through compatible land use planning and control. The AICUZ area consists of land upon which certain incompatible uses may obstruct the air space or otherwise be hazardous to aircraft operation and land areas which are exposed to the health, safety, and welfare hazards of aircraft operation (AICUZ Handbook, USAF, July 1984). These hazards include accident potential and high noise levels.

Objectives. The objectives of the AICUZ program are to protect Air Force installation operation capability from the effects of incompatible land use and to assist local, regional, State, and Federal officials in protecting and promoting the public health, safety, and welfare by providing information on aircraft accident hazards and noise. In addressing these objectives, it is the policy of the Air Force to promote land use compatibility between air installations and communities in the AICUZ area through participating in local, regional, State, and Federal land use planning, control, and coordination processes (AICUZ Handbook, USAF, July 1988).

Methodology. The AICUZ program considers both accident potential and noise levels in developing land use recommendations. Accident potential is discussed under the Aircraft Safety Factors Section. Noise levels are developed for the AICUZ program using the Air Force's NOISEMAP computer model. This model considers various types of information to estimate noise levels. Input data include aircraft type, flight patterns, power

settings, the number of flight operations, engine testing, and the time of day or night the noise event occurs. The output of the noise model is expressed by noise contours showing average day/night sound levels (Ldn). These levels are presented mathematically as Ldn followed by a numeric value. The contours are in Ldn 5 decibel (dB) gradations. The Ldn methodology is described in Appendix D.

Recommended Land Uses. The Air Force promotes land use development compatible with air installation operation by providing guidance and recommendations concerning land use development to local jurisdictions having land use planning and regulatory responsibilities and authorities. The local jurisdiction is encouraged to adopt regulations limiting development in noise and APZ to compatible uses. These recommendations include the identification of compatible use districts (CUD). Noise levels are an important factor in determining CUD's. The Ldn used for land use compatibility planning purposes are Ldn 65, 70, 75, 80, and 85. Examples of land uses compatible with an Ldn 85 to 80 include heavy manufacturing and wholesale commercial which are not people intensive. Agricultural activities such as row crop production are also compatible at this level. Commercial and retail trade and personnel business services are compatible between Ldn 80 and 70 but sound reduction should be included in building construction. No special considerations are suggested for these uses below Ldn 70. Residential uses are discouraged in areas with Ldn of 65 or greater. Under certain conditions, residential development may be allowed from Ldn 75 to 65 provided noise reduction considerations are included in the structures. All land uses are compatible with noise levels below Ldn 65. CUD's for different land use categories are presented in Appendix E.

### 3.17.2 Aircraft Operation

There are currently 25 FB-111 fighter bombers, 23 KC-135 tankers, and 3 T-37 training aircraft based at Pease AFB. All FB-111's are SAC aircraft. Both SAC and the NHANG operated Pease-based KC-135 tanker aircraft. The three T-37 trainer aircraft are currently assigned to an ACE and are used for training purposes. The base is also used by transient aircraft. Daily aircraft operations are presented in table 3.17.2-1. As shown in this table, based aircraft comprise 63 percent of activity and transient aircraft represent 37 percent.

Pease-based FB-111 aircraft account for 33 percent of total air operations. These aircraft are required to take off with maximum afterburner operation for safety reasons which limits the level of noise reduction available through changed operating procedures. Some noise reduction and fuel conservation are attained by minimizing the gross take off weight, thereby reducing the length of time the afterburner must be used. Based tanker aircraft constitute 14 percent of total operations.

These aircraft currently utilize reduced power setting to provide quieter takeoffs. The level of safe power reduction is limited by the tanker's fuel load which greatly affects gross aircraft weight. The T-37 trainer aircraft constitute 16 percent of total operations.

Table 3.17.2-1
Daily Operations Considered in 1987 AICUZ Report

| Element | Closed Patterns | Arrivals & Departures | Operations[1/] | Percent of Total Percent |
|---|---|---|---|---|
| Based Aircraft | | | | |
| KB-111 | 28.80 | 18.20 | 75.80 | 33 |
| KC-135 | 11.97 | 8.58 | 32.52 | 14 |
| T-37 | 15.00 | 7.00 | 37.00 | 16 |
| Subtotal | 55.77 | 33.78 | 145.32 | 63 |
| Transient Aircraft | 33.25 | 18.68 | 85.18 | 37 |
| Total | 89.02 | 52.46 | 230.50 | 100 |

1/ Each closed pattern represents a landing and a takeoff and is counted as two operations.

Pease AFB has a high level of transient operations because of its location. It is used by tanker task force and fighter aircraft as an east coast fuel stop for overseas deployment to Europe. It is also used by aircraft returning from Europe and the base provides U.S. customs checks. It was formerly used by the Vice President's aircraft and is now used by the President's aircraft and associated support and news media aircraft on the President's trips to his summer home in Kennebunkport, Maine.

Aircraft using Pease AFB use several flight patterns, including straight-out departure, straight-in arrival, radar patterns, conventional visual flight rules (VFR) patterns, and jet overhead VFR patterns. Flight tracks for the airport are shown in figure 3-4. Visual traffic patterns and altitudes by aircraft type for based aircraft are shown in figure 3-5. Radar traffic patterns with magnetic headings and altitudes are shown in figure 3-6. Approximately 75 percent of all traffic arrives at Pease AFB from the southeast and departs to the northwest on runway 34.

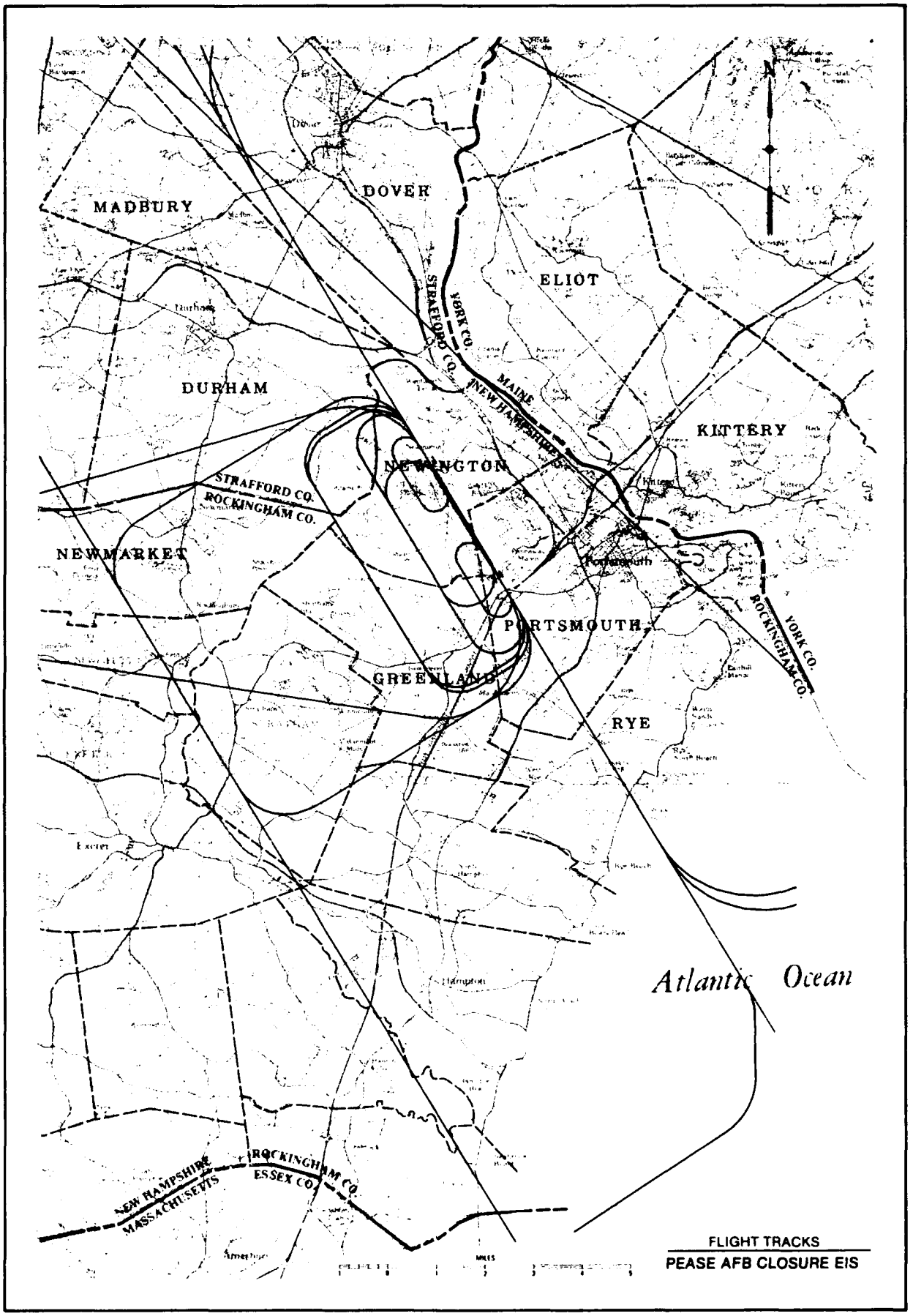
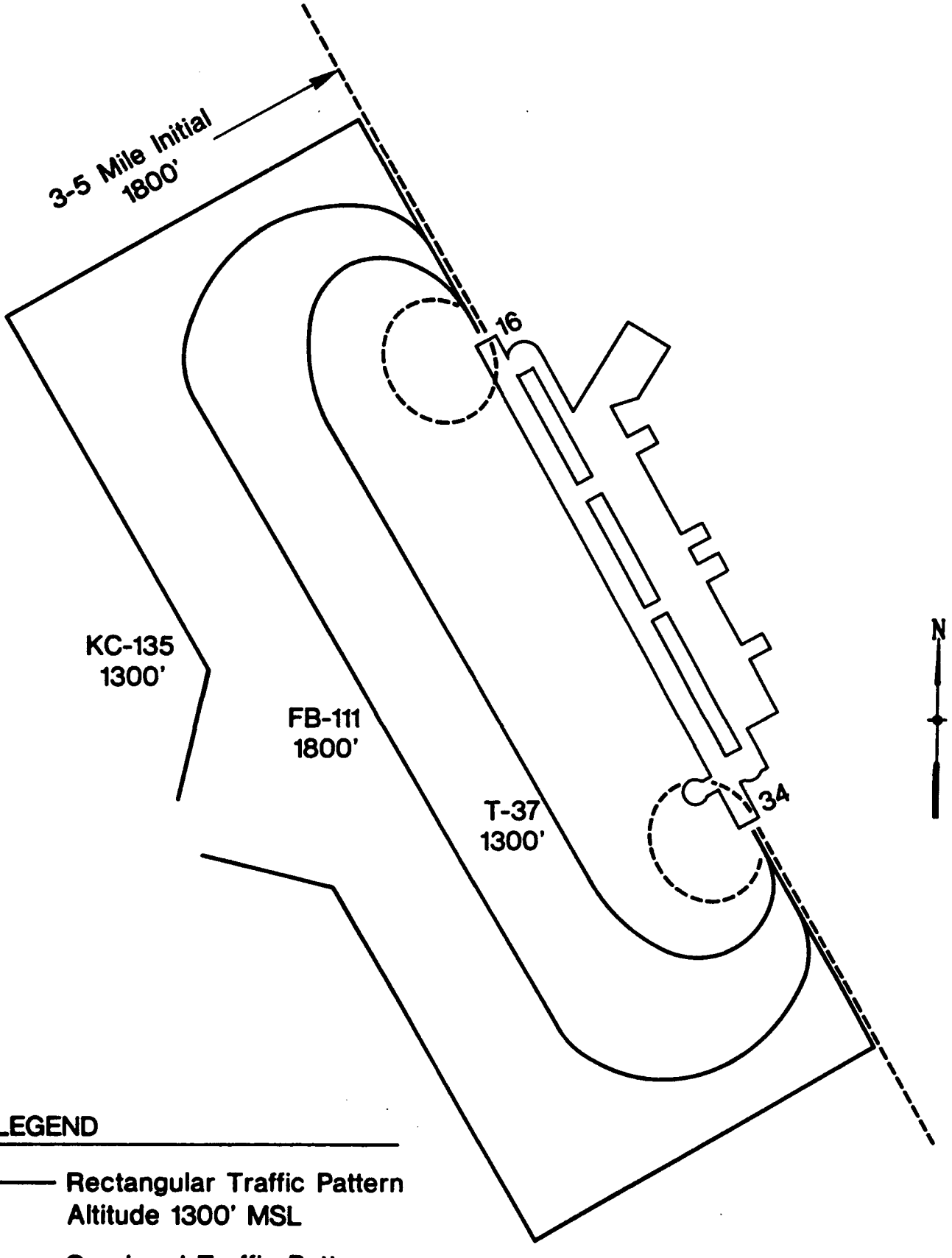

MADBURY
DOVER
ELIOT
DURHAM
KITTERY
NEWINGTON
NEWMARKET
PORTSMOUTH
GREENLAND
RYE
STRAFFORD CO.
YORK CO.
MAINE
NEW HAMPSHIRE
ROCKINGHAM CO.
ESSEX CO.
MASSACHUSETTS
Atlantic Ocean
FLIGHT TRACKS
PEASE AFB CLOSURE EIS

Figure 3-4




LEGEND

——— Rectangular Traffic Pattern
Altitude 1300' MSL

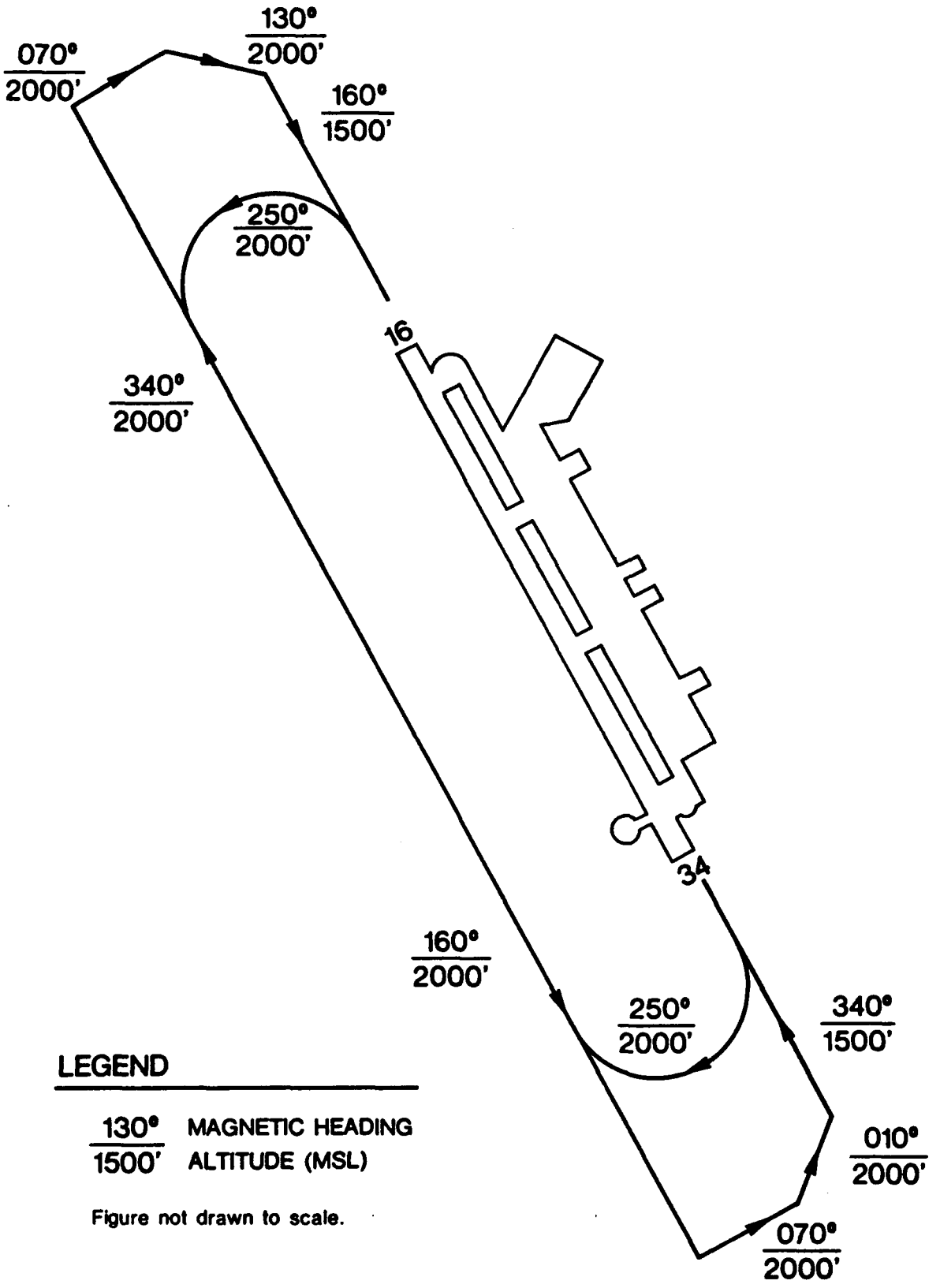
----- Overhead Traffic Pattern
Altitude 1800' MSL

Figure not drawn to scale.

VISUAL TRAFFIC PATTERN

PEASE AFB CLOSURE EIS

Figure 3-5
FEIS




Source: Midair Collision avoidance pamphlet, Pease AFB-127-1 13 OCT 89

RADAR TRAFFIC PATTERN

PEASE AFB CLOSURE EIS

Figure 3-6

FEIS

### 3.17.3 Noise Levels

The noise isopleths for the 1987 AICUZ report conditions, which are considered the existing conditions, are presented in figure 3-7. As shown on the map, the noise contours or noise zone (NZ) extend southeast over the Atlantic Ocean and northwest to the communities of Dover and Madbury.

### 3.17.4 Compatibility of Existing Land Use

As shown on figure 3-7, there are high average noise levels affecting urban-type developments in the New Hampshire communities of Portsmouth, Newington, Greenland, Rye, Dover, Durham, and Madbury. There are currently land uses considered incompatible or highly discouraged from NZ's, resulting from the operation of Pease AFB, in all of these communities. These discouraged uses include residential, business, commercial, and industrial. Urban residential uses currently exist in NZ's having Ldn 75 or greater in the city of Portsmouth and the town of Newington. Residential development is discouraged from zones with this high noise level even when noise reduction methods are included in construction.

Future land use conditions are reflected by community plans and land use regulations, especially zoning ordinances. The previously listed communities have zoning regulations which allow developments similar to those already existing in the NZ. Future development can be made more compatible with high Ldn levels by including noise reduction methods in construction.

Of the several local jurisdictions for which special land use considerations are recommended in the AICUZ report, only the city of Portsmouth specifically considers noise when making decisions on future land use. The city of Dover and towns of Newington, Greenland, Durham, Rye, and Madbury do not specifically consider noise in making future land use decisions. Two communities reported that they had maintained very low densities in some areas partially because of high levels of aircraft noise.

## 3.18 AIRCRAFT SAFETY FACTORS

### 3.18.1 Height and Obstructions

Height and obstruction criteria have been established for Pease AFB. These criteria are used to determine if an object or structure is an obstruction to air navigation. Obstructions include manmade structures, natural objects, and certain land uses which can interfere with air navigation. The Air Force's height and obstruction criteria are contained in Appendix F. The land area outlined in Appendix F for purposes of

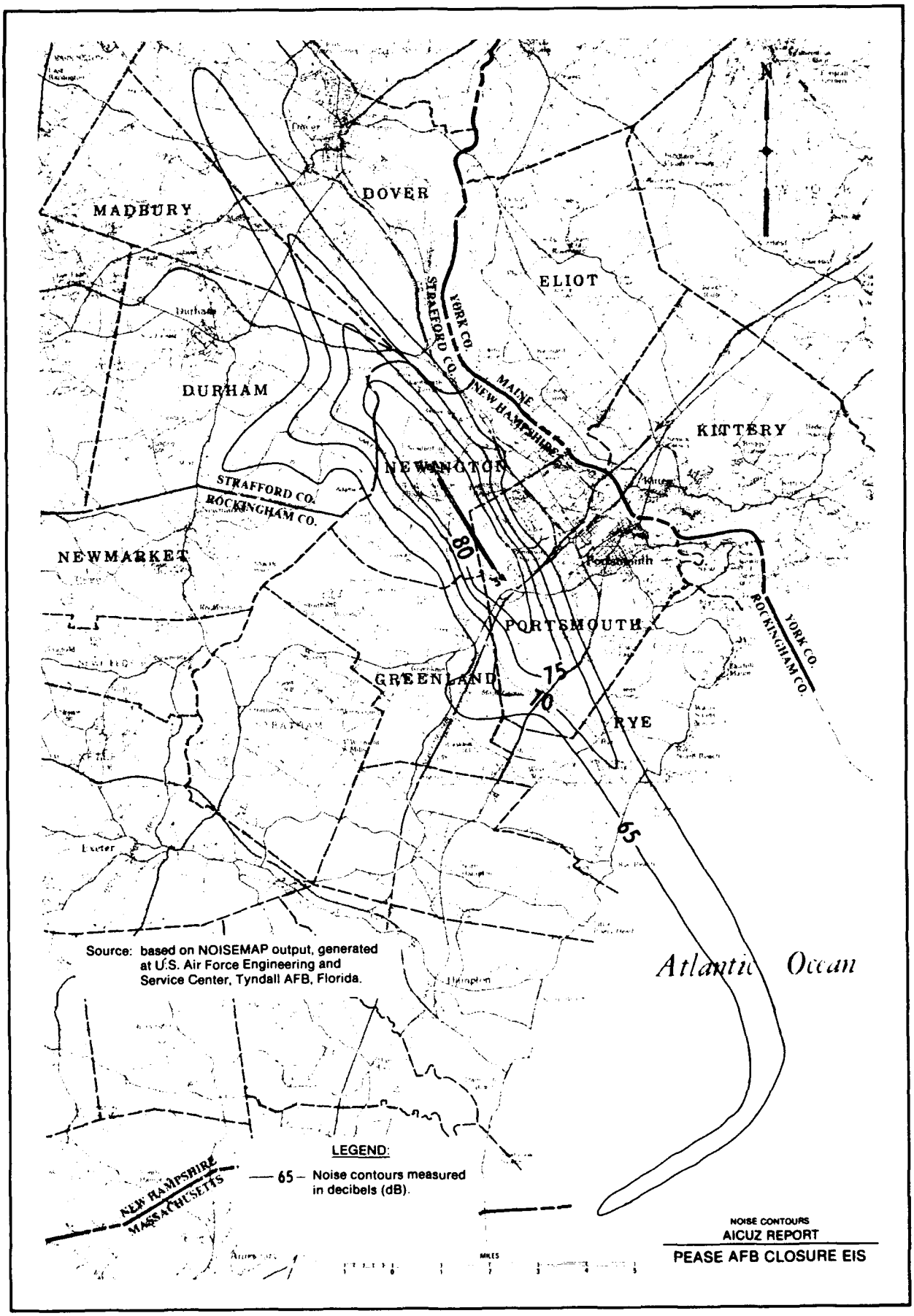

N
MADBURY
DOVER
ELIOT
STRAFFORD CO.
YORK CO.
MAINE
NEW HAMPSHIRE
DURHAM
KITTERY
NEWINGTON
STRAFFORD CO.
ROCKINGHAM CO.
NEWMARKET
80
75
70
65
PORTSMOUTH
ROCKINGHAM CO.
YORK CO.
GREENLAND
RYE
Exeter
Source: based on NOISEMAP output, generated at U.S. Air Force Engineering and Service Center, Tyndall AFB, Florida.
Atlantic Ocean
LEGEND:
— 65 — Noise contours measured in decibels (dB).
NEW HAMPSHIRE
MASSACHUSETTS
MILES
NOISE CONTOURS
AICUZ REPORT
PEASE AFB CLOSURE EIS

Figure 3-7

height height obstruction should also be regulated to prevent the following uses which might otherwise be hazardous to aircraft operations.

1. Uses which release into the air any substance which would impair visibility or otherwise interfere with the operation of aircraft; e.g., steam, dust, and smoke.

2. Uses which produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision.

3. Uses which produce emissions which would interfere with aircraft communications systems or navigational equipment.

4. Uses which would attract birds or waterfowl, such as but not limited to operation of sanitary landfills, maintenance of feeding stations, or the growth of certain vegetation.

### 3.18.2 Accident Potential and Clear Zones

APZ and clear zones are identified as part of the AICUZ program. The program provides information on the relative potential for aircraft accidents in the areas around Pease AFB. These zones outline the area, where, based on Air Force experience, accidents were likely to occur in the past. These zones do not project the probability for accidents to occur. Additionally, the data used in identifying the zones are for all Air Force aircraft and do not specifically consider Pease AFB or the types of aircraft using it. The impact area likely to result from a single accident is also considered. There are three zones at each end of Pease AFB runway where accident potential is a factor in land use development. These are the clear zone (CZ), APZ I, and APZ II zones. These zones for Pease AFB are shown on figure 3-8.

The CZ extends 3,000 feet from the end of the runway and is 3,000 feet wide. It has the highest accident potential of the three zones. The Air Force attempts to control land use in the CZ through the purchase of land, buildings, and easements. At Pease, part of the CZ was developed prior to the base and purchase was not practical. In this instance, the Air Force encourages suitable land use controls to maintain the current uses of private land within the CZ and to avoid incompatible future development.

The APZ I extends 5,000 feet out from the end of the CZ and is 3,000 feet wide. The accident potential in APZ I is less critical than in the CZ. Land use compatibility guidelines for this zone must also take noise into consideration but are flexible to allow reasonable use of the land.

The APZ II extends 7,000 feet beyond APZ I and is also 3,000 feet

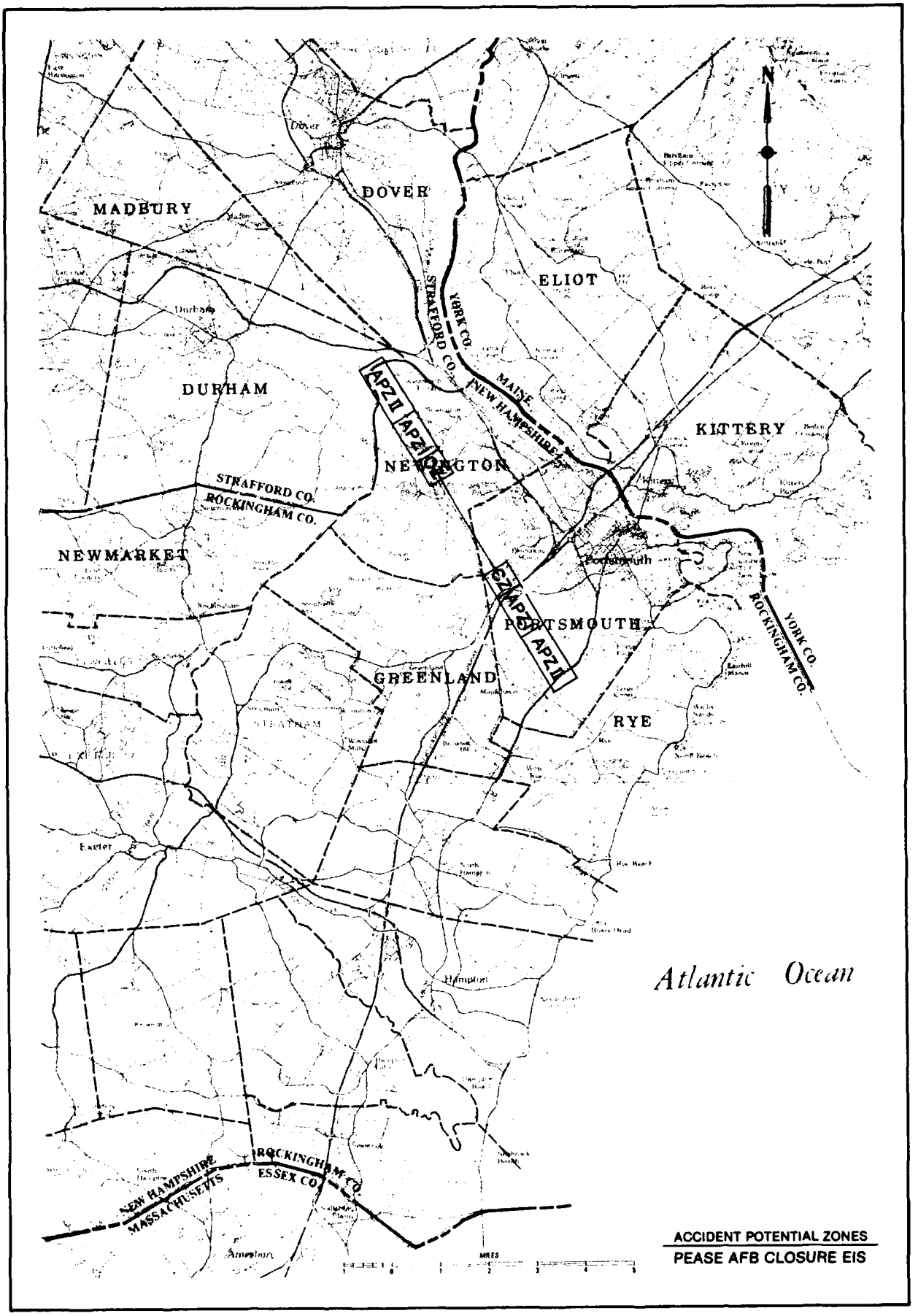

N
MADBURY
DOVER
ELIOT
DURHAM
KITTERY
NEWINGTON
NEWMARKET
PORTSMOUTH
GREENLAND
RYE
APZ II
APZ I
CZ
STRAFFORD CO.
ROCKINGHAM CO.
YORK CO.
MAINE
NEW HAMPSHIRE
ESSEX CO.
MASSACHUSETTS
Atlantic Ocean
ACCIDENT POTENTIAL ZONES
PEASE AFB CLOSURE EIS

Figure 3-8

wide. This zone has the least accident potential of the three zones but still has a sufficient potential to be incompatible with certain types of development. Land use compatibility guidelines for this zone are less restrictive than for APZ I.

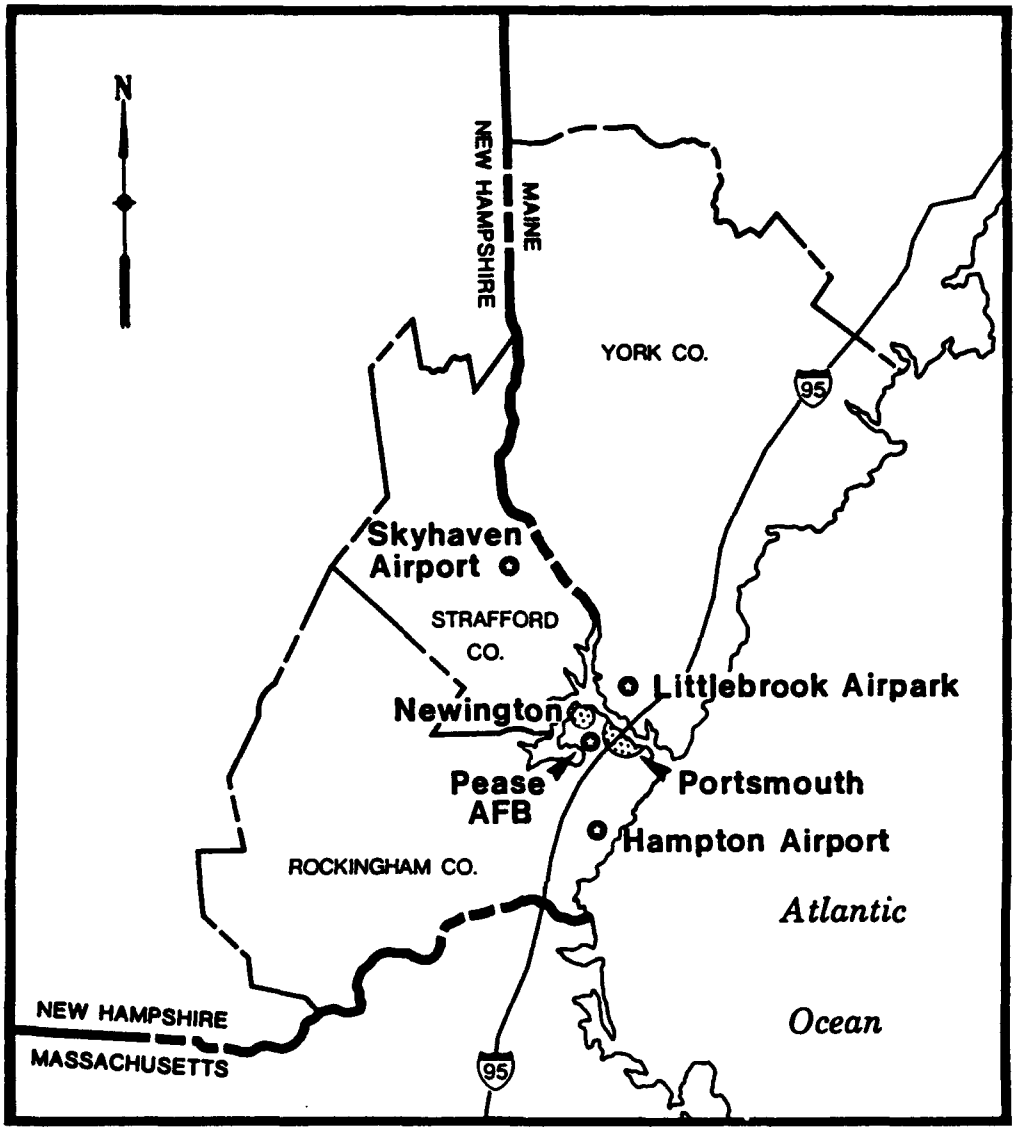
### 3.18.3 Air Space Management

The Pease AFB airport traffic area is the area within a 5-mile radius from the surface up to 3,000 feet. The Pease control tower provides the following services within the airport traffic area during VFR conditions: advises pilots of flight activity, issues take-off and landing clearances, and sequences VFR traffic with instrument flight rule (IFR) traffic. The Pease Radar Approach Control (RAPCON) provides radar coverage over an area approximately 60 miles east and west and 40 miles north and south of Pease. During IFR conditions, the airport traffic area becomes part of the control zone and is controlled by the RAPCON. Littlebrook Airport, a satellite airport, is located within the control zone. During IFR conditions, aircraft must obtain a clearance and release from the RAPCON prior to departure. Two other satellite airports, Skyhaven and Hampton, are located within Pease approach airspace but are outside of the control zone. The general locations of these airports are presented in figure 3-9.

### 3.18.4 Air Traffic Safety

There are aircraft safety concerns in the Pease AFB area. A recurring problem involves civil aircraft using Interstate 95 and/or the coast of the Atlantic Ocean for VFR navigational purposes. Interstate 95 runs north and south along a busy civil air traffic route. It is adjacent to the base and crosses under Pease air space. The pilots in these aircraft are not always aware of the high level of activity at Pease. Another problem exists because of the three small airports operating in the Pease area. These were previously identified in the above paragraph and on figure 3-9. Aircraft departing or going to these airports do not always coordinate with the Pease control tower. This situation results in potential unsafe conditions.

The base has taken actions to reduce potential safety problems. The base has prepared a midair collision avoidance pamphlet which is provided to area civil airports. The pamphlet describes the types of planes based at Pease, their important landing and take-off characteristics, the different operations flown from the base, and VFR and IFR services provided by the control tower to civil aircraft and presents maps showing various flight patterns and routes. The pamphlet also describes a recommended method for scanning the horizon for aircraft. The flying safety officer visits civil airports to discuss Pease AFB operation and avoidance of potential problems.




PEASE AREA CIVIL AIRPORTS

PEASE AFB CLOSURE EIS

Figure 3-9

### 3.18.5 Bird Hazards

A bird aircraft strike hazard exists at and in the vicinity of Pease AFB. This is due to resident and migratory bird species (509 BMW Base Plan, November 1988). There were eight bird strikes between 1 January and 30 September 1989 caused by sea gulls and crows. **Federal and State wildlife biologists have consulted with the base regarding nuisance birds and have assisted in developing plans for the dispersal of these birds.** The base has developed a bird aircraft strike hazard (BASH) plan to minimize bird hazards and to promote safe flying operations. This plan is designed to:

- Establish a Bird Hazard Working Group (BHWG) and designate responsibilities to its members.

- Establish procedures to identify high hazard situations and to aid supervisors and aircrews in altering/discontinuing flying operations when required.

- Establish aircraft and airfield operating procedures to avoid high hazard situations.

- Provide for disseminating information to all assigned and transient aircrews on bird hazards and procedures for bird avoidance.

- Establish guidelines to decrease airfield attractiveness to birds.

- Provide guidelines for dispersing birds when they occur on the airfield (509 BMW BASH Plan, November 1988).

The plan basically assigns responsibilities and proposes methods for warning air crews and dealing with the potential bird problem. Approaches aimed at dealing with potential bird problems include air operational changes to reduce exposure; land management guidelines to reduce habitat and potential food and water sources near the air base; and procedures for scaring or, if need be, destroying the birds causing a problem. A scare gun is used for this purpose at Pease AFB.

## 3.19 TRANSPORTATION

The base is served by a network of arterial roads in good condition. Access to off-base roads is provided through the main gate, the industrial gate, and the back gate. The base road system and the main gate and back gate are shown in figure 1-3. The industrial gate, which is not shown, is located at the intersection of Merrimac Drive and Spaulding Turnpike. Both the main gate and industrial gate access the Spaulding Turnpike. The main gate provides access to the northbound and southbound lanes of the

Spaulding Turnpike, the city of Portsmouth, and the town of Newington. The industrial gate, which is normally locked and only opened by request, provides access to only the southbound lane of the Spaulding Turnpike. The back gate accesses a residential street in the city of Portsmouth and is not suitable for heavy truck traffic. Occasionally, the base is accessed or exited via Ashland Road, east of the base housing. This road intersects an off ramp from the south-bound lane of the Spaulding Turnpike, approximately one-quarter mile before the ramp reaches the Portsmouth Traffic Circle. The circle, in turn, provides access to area roads, including Interstate 95. Ashland Road is gated, and this access point is only used under special conditions. There is also emergency access available to McIntyre Road, which is a limited access highway crossing the base.

An access problem could result from the scheduled construction of an overpass at the intersection of Gosling Road (which is Newington Road on the base) that goes through the main gate and the Spaulding Turnpike. Access to the main gate will be maintained at all times during construction.

Interstate 95 is located 2 miles south of the main gate. It can be accessed from either the main gate or the industrial gate via the Spaulding Turnpike.

The Spaulding Turnpike has high volumes of commuter traffic; however, off-peak volumes are well within its capacity. Average daily traffic (ADT) on the Spaulding Turnpike, as recorded at the General Sullivan Bridge in 1989, averaged 57,792 vehicles on weekdays and 46,987 on Sundays. Seasonally, volumes varied with higher ADT counts experienced during the summer months. The peak month in 1989 was August, during which an average weekday ADT of 60,040 was recorded and an average Sunday ADT of 51,572 was recorded. The lowest traffic month was January. During that month, weekday traffic counts averaged 53,214 and Sunday counts averaged 41,624 (Automatic Traffic Recorder Report, Calendar Year and Monthly Reports 1989, New Hampshire Department of Transportation). Interstate 95 has high volumes of commuter traffic and high volumes of weekend and holiday traffic during the summer. Problems are normally only encountered during the summer months (New Hampshire Department of Transportation, October 1989). On Interstate 95, peak daily traffic volumes occur on weekdays during the summer months. In 1989, weekday and Sunday ADT at the Hampton toll booth averaged 46,179 and 58,795, respectively. The peak month was July, with vehicle counts of 62,267 and 85,406 for weekdays and Sundays, respectively. The lowest counts of 35,797 and 42,027 for weekdays and Sundays were experienced in January (Automatic Traffic Recorder Report, Calendar Year and Monthly Reports 1989, New Hampshire Department of Transportation).

The base has a railroad spur track which formerly provided access to the Boston and Maine Railroad. The spur is located on the base and off the base on land held by title and land controlled by easements. The spur is currently in poor condition and part of it has been removed. The alignment of the spur is shown in figure 2-2. A major renovation would be required before the track could be used.

The Pease runway is 11,300 feet long and 300 feet wide. It is capable of accommodating all types of normal military or commercial cargo aircraft.

Alternative ways of shipping equipment, material, and property from the base include commercial and military trucking, the railroad, and commercial and military cargo aircraft. Alternative routes to Interstate 95 are through the main gate and the industrial gate. Both of these utilize the Spaulding Turnpike. The interstate can be accessed via the back gate and the emergency gate on McIntyre Road; however, these routes are more lengthy and, in the case of the back gate, include residential streets.

Hazardous materials are currently shipped from the base by haulers licensed to transport hazardous material. These haulers are under contract with the DRMO. All loads are properly manifested and shipped in accordance with Federal requirements and State and local laws.

# CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

## 4.1 INTRODUCTION

This chapter provides a discussion of the effects of closure on each aspect of the environment described in Chapter 3, with the exception of socioeconomic factors. These factors were not given detailed consideration for reasons discussed later in this chapter. Effects may be either direct, indirect, or cumulative. Direct effects occur at the same time and place as the action. Indirect effects occur later in time or are farther removed in distance but are still reasonably foreseeable. A cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency undertakes such other action.

NEPA requires a discussion of the significance of effects. Significance varies with the setting of a closure action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short-term and long-term effects are relevant. Significance also requires consideration of intensity, such as the degree to which the action affects public health, endangered species, or an ecologically critical area. Significance cannot be avoided by terming an action temporary or breaking it down into small component parts.

This chapter also discusses mitigation of adverse effects. Mitigation includes minimizing the impact, restoring the affected environment, reducing or eliminating the impact over time, compensating by providing substitute resources, or avoiding the impact altogether.

## 4.2 SOIL RESOURCES

The minor construction activities that will occur regarding the transition of the NHANG unit into a stand-alone unit will cause disturbance to soils. This NHANG work will cause only temporary, localized disturbances to soils. Significantly disturbed areas will be revegetated to prevent soil loss.

The scheduled underground tank removal, overfill protection, and other tank work will be done to protect the environment and for safety reasons. Ultimately, during the protection and maintenance status, all underground storage tanks and associated piping systems not being used by the NHANG unit will be rendered temporarily out of service in accordance with applicable regulations. Bulk fuel storage tank 2 and its associated piping will be drained. The scheduled demolition of bulk fuel storage

tank 3 will not be affected by base closure. Removal of deteriorated underground tanks will occur as part of the closure action.

As stated in Chapter 3, accidental releases of fuels have occurred on the base. The number of releases at Pease AFB will be significantly reduced upon closure and will result in an insignificant benefit to the soil resources because most releases are cleaned up before reaching exposed soils.

In accordance with all applicable regulations, all hazardous materials on-base outside the NHANG cantonment area, including herbicides and pesticides, will be shipped and used elsewhere or sold as excess. All hazardous wastes will be collected in accordance with all applicable regulations and disposed of through the DRMO which will determine the place of disposal. Existing approved disposal sites will be used. These procedures will also be used by the NHANG, which will continue to store hazardous materials and generate small quantities of hazardous wastes. Upon removal of hazardous materials and wastes, storage facilities will be cleaned as necessary. All solutions used in cleaning will be handled appropriately based on the nature of its potential contaminants. Any contaminated equipment will also be cleaned or properly disposed of if necessary.

All permitted radioactive sources will be returned to the Air Force supply system for reuse or will be disposed of in accordance with applicable regulations.

With the withdrawal of the FB-111A's and the closure of the base, generation of most of the approximately 30 tons per month of solid wastes that are disposed of at various landfills in the local area will essentially cease. During closure, a slight increase will occur from discards and from several building alterations by the NHANG unit. No major demolition of buildings is planned. Wastes will still be generated by the NHANG unit. A small amount of waste will be generated during the caretaker status prior to disposal of the property. These wastes will be managed by the caretaker unit. The overall reduction of solid wastes to local landfills will prolong the use of the landfills by other entities in the community, which can be considered a significant beneficial impact.

## 4.3 AIR QUALITY RESOURCES

Closure of Pease AFB will result in a significant reduction in the annual mass emissions of the five air pollutants described in Chapter 3. A reduction will also result in the emissions of the Maine Energy Recovery Company incinerator in which 332 tons per month of solid wastes from the base are disposed. The NHANG will continue to generate approximately 8

of the 332 tons of solid wastes per month, however. Also, emissions from the incineration of a small amount of medical wastes on base will cease.

Emissions will still occur from the NHANG unit operations. It should be noted that both the NHANG and the transient aircraft operations emissions presented in table 3.5-1 will continue to occur during the protection and maintenance status of the base. This reduced air pollution is a beneficial but insignificant effect. It will not enable attainment status for ground-level ozone concentrations in the Portsmouth area because the nonattainment status for the area is caused primarily by the transport of ozone from large urbanized areas to the south.

As stated in Chapter 3, a building survey for asbestos was completed in March 1990. Any nonencapsulated asbestos discovered during the survey that was found to be in a friable state will be properly removed. The removal of such asbestos will have a significant beneficial impact on air pollution and public health. Nonfriable asbestos, as well as lead-based painted surfaces, will not be disturbed and left in place. These buildings will not cause any significant health hazard to the public.

## 4.4 GROUND WATER RESOURCES

As noted in the section on soil resources, with exception of materials associated with the continued operation of the NHANG, all hazardous materials and hazardous wastes will be removed during closure of the base. This will reduce the potential for accidental releases of these materials and resulting contamination of ground water. Because current operations have not been identified as sources of contamination, this impact, although beneficial, is not considered significant.

Potential increases in the rate of contaminant migration across the base boundaries due to reductions in withdrawal of water were identified as significant concerns during the scoping process. This issue was addressed during the IRP investigations. Preliminary ground water flow modeling was performed on the aquifer in the vicinity of the industrial shop and parking apron. The model used was the USGS Computer Model of Two-Dimensional Solute Transport and Dispersion in Groundwater. (A detailed description of the model is found in Section 4 of Interim Technical Report No. 2 for the IRP, Stage 2, Pease AFB, prepared by Roy F. Weston, Inc.). Field work, including water level measurements and pumping tests to determine accurate information on hydraulic conductivities and transmissivity, was performed to provide sufficient data to develop the model.

The results of the field work and ground water modeling suggest that reductions or complete cessation of withdrawals from the base production wells will not significantly alter the ground water flow field,

directions, and velocities in the aquifer. The primary support for this conclusion is the fact that pumping from the primary well (Haven Well), even during peak pumping rates, does not create a significant cone of depression (i.e., ground water table is near static level at a radius of 25 feet from the well).

As discussed in Chapter 3, risk assessments for five IRP sites will be conducted as part of the combined Remedial Investigation/Feasibility Study which is currently underway. These assessments will be performed within the next 3 years and will include an environmental fate and transport assessment, which will describe the potential for offsite migration, provide estimates of the direction of movement, and include information of factors that may significantly affect the fate and transport of contaminants released from a site.

## 4.5 SURFACE WATER RESOURCES

The potential for accidental releases of fuels and other hazardous materials on Pease AFB lands will be significantly reduced upon closure. This will result primarily in an insignificant benefit to the surface waters of the area because most releases are cleaned up before reaching surface waters.

There is the potential for the reduced loading of the wastewater treatment plant to cause a reduction in treatment efficiency upon closure. The plant is a digester/trickling filter/drying bed-type biological wastewater treatment system. A designed population size of microorganisms digest and decompose a constant amount of supplied wastes. Upon reduced loading, the population of the microorganisms will begin reducing in size resulting in an unbalanced system. This unbalanced system will in turn result in changes in wastewater quality, such as pH levels. A plan is under development which will forecast potential wastewater quality changes and recommend operational adjustments (such as adding lime in the event of a drop in the pH level) to prevent any significant adverse impact to the Piscataqua River.

Sewer lines and lift stations that will no longer need to be used during the protection and maintenance status of the base are also currently being considered in closure planning. In order to prevent corrosion and deterioration of these utilities, it may be best to leave them operational and occasionally flush them with hydrant water. Such dilution of the system with clean water will also be considered in the planning mentioned above for forecasting potential wastewater quality changes.

Discharges and nonpoint source inputs of contaminants into marine waters have resulted in accumulated and elevated concentrations in the

water column, sediments, and living marine resources in all regions of the country, according to the NOAA. However, current indicators of pollution stress at the population, community, and ecosystem levels often cannot adequately distinguish natural variability from pollution effects or determine when observed changes or differences are of concern (NOAA, 1988). In this context of unknown cumulative effects, the reduction of contaminants from spills, surface runoff, and wastewater discharges from Pease AFB upon closure can be considered only potentially significant.

## 4.6 PLANT AND WETLAND RESOURCES

The loading of equipment and property during closure is expected to cause temporary disturbances to grassed areas adjacent to buildings needed for staging the move. These disturbances are expected to be insignificant.

Mowing activities upon closure of the property will be reduced to that necessary to maintain an overall neat appearance, as opposed to a well-manicured appearance of the base. The mowing of old fields to retard plant succession will only occur in those fields where invasion by woody species, because of their size, warrants it as a last opportunity to mow. **The mowing will be conducted after August 1 of each year in order to avoid destroying any bird nests, eggs, or young.**

The base's popular firewood cutting program will be ended when the Civil Engineering work force is reduced. Damaged and inferior hardwoods will no longer be thinned; however, the overall health and vigor of base forest resources should not be significantly affected. Unlawful cutting during the protection and maintenance status of the base will be prevented by restricting public access.

The minor construction activities that will occur in conjunction with transition of the NHANG unit into a stand-alone unit will also cause disturbances to grassed areas. Significantly disturbed areas will be graded and seeded. Several grassed areas and less than one-half of an acre of woodland will be destroyed for the construction of a fuel truck fill stand, a pump house, and additional pavement. These areas are located in the base operations area; therefore, their destruction is not considered to be significant.

The perimeter and security fencing of the NHANG cantonment area will primarily follow existing fence lines but will traverse some lawn and wooded areas. Vegetation disturbances and losses will be minimal and insignificant. Along the alignment, the fewest trees possible will be destroyed so a visual buffer remains.

Areas around transformers will continue to be treated with herbicides during the protection and maintenance status of the base. This will be done in order to prevent a potential fire hazard from developing adjacent to the transformers.

## 4.7 FISH AND WILDLIFE RESOURCES

Fishing will not be allowed upon closure of the base. The reduced human use of the base freshwater pond fisheries will result in insignificant increases in warmwater fish sizes and numbers during the time period in which their reuse is under determination. Restocking of trout each spring will also not occur during this time period.

The needed fish habitat improvement projects described in Chapter 3 will not be implemented because of the closure of the base. Their nonimplementation will not be expected to cause a loss of the fisheries and will not be considered a significant adverse effect. Flashboards across the spillways of the ponds, which control the levels of water, will be maintained.

The vegetation losses (primarily grasslands) caused by minor construction activities will occur in operational areas which are infrequently foraged by cottontail rabbits. The reduced manicure-type mowing activities will increase the inhabitation of some grassed areas by cottontail rabbits. This will be offset by the reduced mowing of old fields, which will reduce habitat. It will be further offset by the decreased use by rabbits and upland game birds of other grassed areas in which IRP activities will occur. The expected net effect will be an insignificant increase in rabbits and decrease in upland game birds during the interim status.

Woodland losses caused by NHANG and IRP activities will total approximately 1 acre. This will not cause any significant loss of wildlife habitat.

Hunting will also not be allowed upon closure of the base. The reduced human use of the base wildlife resources for hunting will result in insignificant increases in wildlife numbers, except for pheasants which will no longer be stocked. The deer population may increase to a level of conflict with the NHANG and transient aircraft use of the base. From 5 to 12 deer are taken by hunting each year, which will no longer occur. In the event a conflict does occur, the New Hampshire Department of Fish and Game will be contacted regarding the use of population control measures such as a special hunt.

Because of the scarcity of data, environmental impact assessments rarely consider the effect of noise on wildlife. Aircraft noise is known

to cause a startled response in wildlife, but the accompanying physiological response has not been well studied (Manci, et al., 1988). The reproduction of various groups of animals is affected by noise. Negative reproductive effects of aircraft noise could potentially decrease populations of wildlife species, but few studies have examined the effects of noise on wildlife at the population level. It is likely that the closure of Pease AFB and the reduction in aircraft noise will benefit wildlife but to an unknown degree.

The reduced air, water, and soil pollution that will result from the closure will also benefit wildlife to an unknown degree. Past pollution has undoubtedly affected the food chains and vigor of some wildlife species and populations, which is a common consequence of all human development. The use of some pesticides may still be necessary during interim status. An appropriately licensed pesticide applicator will be on the protection and maintenance staff.

## 4.8 ENDANGERED, THREATENED, AND SENSITIVE SPECIES

No adverse effects to the endangered bald eagle should occur as a result of closure or IRP activities. The Wintering Bald Eagle Management Agreement will continue during closure.

Upland sandpipers should not be adversely affected by closure or IRP activities. The grassland strip between the runway and apron will not be used for the staging of any movement of equipment. The strip will continue to be mowed because the runway will still be used by the NHANG. The mowing frequency and timing should not change.

Construction activities for the placement of approximately 2,000 feet of barbed wire perimeter fence for the NHANG in the grassland strip between the runway and apron will be scheduled to avoid adversely affecting nesting upland sandpipers. Construction will be scheduled before **April 1** or after **September 1**.

Both species should benefit from reduced noise stress when aircraft use of the base is reduced. The potential for accidental collision of the two species with aircraft will also be reduced. Neither species is known to have been involved in an accidental collision to date, however. These beneficial effects can be considered insignificant.

No impacts to other rare animal and plant species and natural communities of statewide or national significance are expected to occur. Closure activities which would be likely to disturb such species and communities will be confined to areas which have already been extensively disturbed and it is highly unlikely that adverse impacts would occur.

## 4.9 VISUAL AND ESTHETIC VALUES

Impacts to visual and esthetic resources should not be significant. Even though mowing activities will be reduced, a neat appearance, as opposed to a well-manicured appearance, will be maintained on the base property. Litter will also be managed to maintain a neat appearance.

Scenic overlook areas will not be disturbed by any closure or IRP activities. Use of the trails will be discontinued.

Significant deterioration of the outside of buildings should not occur because the exteriors of all base buildings have been recently painted. Significant deterioration of streets should not occur because the majority of the base roads have been completely rebuilt.

Base security will continue to the level required to provide resource protection services for the installation. This security will prevent any vandalism of base property during this period. Upon attainment of stand-alone status, NHANG security forces will patrol the cantonment area.

## 4.10 HISTORIC RESOURCES

One base property, the Newington Stone Schoolhouse, is on the NRHP as part of the Newington Center Historic District. This building has been leased to the town of Newington for a period of 50 years. This lease will remain in effect following closure of the base; therefore, closure will have no effect on this property.

Mr. Garvin, architectural historian on the NH SHPO staff, visited the Loomis estate and conducted research regardings its history. Based on this research, he prepared a NRHP nomination form for the Richman Margeson (Loomis) Estate. This form was signed by the NH SHPO, indicating his agreement that the property appears to meet the criteria for nomination to the NRHP. The completed form is undergoing Air Force approval and processing. Necessary repairs to prevent deterioration while the base is in caretaker status will be coordinated with the SHPO. Access to the base will continue to be restricted. Under these conditions, closure will not affect these structures.

Ground disturbance associated with closure will be restricted to the activities discussed in the soil and ground water resource sections. These actions will be coordinated with the SHPO, and surveys will be conducted as necessary. Other prehistoric and historic archeological resources which may be present on the base will not be affected by closure.

## 4.11 SOCIOECONOMIC FACTORS

An EIS is required to discuss socioeconomic effects only when such effects are interrelated with natural or physical effects. During preparation of this EIS, the Air Force considered whether any indirect biophysical effects could be attributed to socioeconomic impacts resulting from the closure of Pease AFB. No such effects or interrelationships were found. Therefore, it was not necessary for the completeness of the environmental analysis to forecast socioeconomic consequences, and this EIS does not attempt to do so. A discussion of the impacts to employment is presented below to provide general information on this important topic. No attempt is made in this discussion to quantify or determine the significance of employment impacts.

The Air Force is sensitive to the community upheaval caused by closing a major employer like Pease AFB. Therefore, the Air Force is working with the OEA to assist those communities expected to be hardest hit as a result of base closure.

Additionally, a second EIS will be prepared to cover the Air Force's proposed final disposition of the base property, including community reuse. As the Air Force has explained to Senator Humphrey, socioeconomic impacts, both positive and negative, will be discussed in the reuse EIS to help the Air Force make its decisions on disposal and reuse alternatives. (See the response to comment 102a in Volume II of this EIS.) This is because there will be an interrelationship between the impacts, biophysical and social, that will be generated by different ways of making new use of the facilities. The treatment of socioeconomics in the reuse EIS will be limited to those circumstances where the interrelationships require the analysis in order to understand the scope of the environmental impacts.

In addition, the Air Force will prepare a companion study of the socioeconomic effects of disposal and reuse. This study will treat socioeconomic impacts more comprehensively than will the disposal and reuse EIS. For example, it will examine overall effects of reuse on such factors as the loss of tax revenue, housing and school impacts, and the loss of employment from base closure as if there were not positive benefits from reuse. The elements will then be compared to the gains expected as a result of the reuse options for the base.

Therefore, if the expected socioeconomic impacts from reuse are found to lead to effects on the biophysical environment, they will be included in the reuse EIS. Even if they do not have such effects, they will be included in the companion socioeconomic study. Regardless of the document in which these socioeconomic analyses appear, they will be a part of the analysis process and presented to the public on a timely basis for full

public review and comment. The socioeconomic analyses will also be fully utilized in decision making with regard to disposal and reuse.

The OEA, located in the Office of the Assistant Secretary of Defense, provides the chief staff arm for the President's Economic Adjustment Committee (EAC). The EAC consists of the Federal department and agency heads and was established under Executive Order 12049 on 27 March 1978 to bring to bear the resources of various Federal agencies in assisting communities affected by base closures.

One of OEA's activities is to assist these communities to develop and implement a comprehensive economic recovery program. The EAC then affords priority assistance to community requests for Federal technical assistance, financial resources, excess or surplus property, or other requirements that are part of this program.

Economic adjustment assistance has been initiated in the Pease AFB area. Currently the OEA is working with the Pease AFB Redevelopment Commission in an effort to identify alternative uses for the base. The Commission, which was established by the State of New Hampshire to plan for and implement the redevelopment of the base, is the primary point of contact for Air Force and OEA assistance.

The OEA is assisting the Commission with the redevelopment of Pease AFB in what can be summarized as a three step process. First, the impacted community or area must request OEA assistance. This was accomplished through a request from the Pease AFB Redevelopment Commission. Second, a plan for reuse of the base is prepared. This step is currently underway. The Commission, with the assistance of a private consulting firm, is preparing a plan identifying and evaluating potential reuse alternatives. The planning effort is being funded by the OEA, the Federal Aviation Administration (FAA), and by State and local governments. Alternatives identified in this plan will be further evaluated in an EIS for base reuse and disposal. In the third and final step, the plan implementation will be initiated. The OEA can assist the Commission in implementation directly and through the EAC.

### 4.11.1 Employment

Base closure will adversely affect employment in the economic impact area. Aspects of employment which may be affected include direct employment provided by the base to military and civilian personnel, indirect

employment resulting from the expenditure of payrolls and the purchase of goods and services in the area economy, and the availability of workers in the part-time labor force. Any impacts which do occur may increase the effect of the prior withdrawal of the FB-111. Potential adverse impact should be diminished somewhat by the placement of some employees in other Federal jobs and by the employment of contractor personnel to provide base security and maintenance following closure. Because the alternatives for the reuse of the base have not been identified, the overall effect on employment cannot be determined at this time. An analysis of employment impacts will be conducted in conjunction with the reuse EIS when such impacts can be assessed against new employment opportunities. The Air Force plans for socioeconomic analysis as related to the reuse EIS are described in section 4.11, page 4-9. They are somewhat different from plans described in the draft closure EIS.

## 4.12 GOVERNMENT REVENUES/EXPENDITURES

Base closure may directly or indirectly affect local government revenues, expenditures, and services. The combined effect of base closure and the withdrawal of FB-111 aircraft from Pease will increase the effect of potential impacts. Base reuse will offset or mitigate the negative effects of base closure to some extent. For a complete analysis of the impacts of base closure to local governments, the offsetting impacts of base reuse would have to be considered. Such an analysis will be conducted in conjunction with the reuse EIS as previously described in section 4.11, page 4-9. Because the effects of reuse are not critical evaluators, the impacts of base closure on school buildings located on-base and on local fire and rescue support activities are discussed in this section.

### 4.12.1 School Buildings

Prior to the publication of the DEIS, it was determined that both Jones and Bracket Elementary Schools, which are located on-base, would be closed and mothballed in conjunction with base closure. Since the public comment period on the DEIS, the Air Force has been notified that the Portsmouth City School Department may desire to continue operations at Jones Elementary School. If this is the case, the fence line which separates the base from the surrounding area will be located so that open access to Jones School would be possible while permitting base security following base closure. Students attending Jones School will for the most part be from off the base. Exceptions to this may occur if part of the caretaker force resides on-base. The combined impact of realignment and base closure will still result in the closing and mothballing of Bracket Elementary School. Base security will continue to the level required to protect the schools from vandalism. Bracket School will be closed simply as a cost-saving measure because there will be insufficient elementary

students to justify its operation. School closure will occur along with base closure because of reduced enrollment and revenue. The duration of the closure is unknown but may be partially dependent on the success of reuse activities. The on-base community of which these schools are a part will be vacated and closure of the Bracket School is not a significant impact.

### 4.12.2 Fire Fighting and Rescue Assistance

Base fire fighting and rescue capabilities will be the responsibility of the NHANG during the period between base closure and final disposal for reuse. Therefore, the current community assistance support agreement will need to be renegotiated with that agency to reflect the level and types of assistance which will be provided to area communities.

## 4.13 HOUSING

The demand for rented and owner-occupied housing may be diminished by both FB-111 aircraft withdrawal and base closure actions. On-base housing will also be vacated. The magnitude and effects of these changes are dependent on base reuse. A reuse alternative, successful in attracting additional residents to the area, could result in no impact to off-base, owner-occupied, or rental housing. The reuse alternative will dictate the disposition of on-base housing. Impacts on housing cannot be identified until the reuse of the base has been determined. An analysis of housing impacts will be conducted in conjunction with the reuse EIS when such impacts can be assessed against changes resulting from reuse.

### 4.13.1 Housing Changes

The withdrawal of FB-111 aircraft and base closure activities will cause the transfer of uniformed and some civilian personnel out of the Pease AFB area. The greatest change will be caused by the relocation of uniformed military personnel who, with the exception of dependents and discharged persons staying on in the area, will be wholly removed. Uniformed military personnel who are not housed in dormitory housing on-base are either housed in residential structures on-base or own or rent residences off-base. The number of persons residing in each class of residence who are affected by realignment and base closure are presented in table 4.13.1-1. As shown in this table, a maximum of 1,850 rental units and 220 owner-occupied units will be affected by the combined realignment and base closure actions. An additional 1,209 households will be affected on-base.

Table 4.13.1-1
Military Household Relocations

| | Realignment | | Base Closure | | Combined Impact | |
|---|---|---|---|---|---|---|
| | (1) H'hold | (2) Persons | (1) H'hold | (2) Persons | (1) H'hold | (2) Persons |
| Off Base | | | | | | |
| Rental | 497 | 1,175 | 1,353 | 2,218 | 1,850 | 3,393 |
| Owner-occupied | 47 | 171 | 173 | 563 | 220 | 734 |
| Total off-base | 544 | 1,346 | 1,526 | 2,781 | 2,070 | 4,127 |
| On base | 390 | 1,419 | 819 | 2,665 | 1,209 | 4,084 |
| Total All Housing | 934 | 2,765 | 2,345 | 5,446 | 3,279 | 8,211 |

## 4.14 SERVICES FOR MILITARY RETIREES

Military retirees and their dependents are authorized access to many of the services and facilities provided on-base for active duty personnel. These include base commissary and exchange privileges, medical treatment, and access to recreational facilities. Because of the advantage of being near a base with a high level of services, many retirees have located in communities near Pease AFB. The commissary, base exchange, hospital, and like facilities will be closed along with the base. **Special access privileges for retirees and dependents will be greatly reduced inasmuch as there will be few facilities on-base for which they need access. They will be allowed access to use the small Army Air Force Exchange Service (AAFES) store which will be located in the NHANG cantonment area.**

### 4.14.1 Commissary/Base Exchange Privileges

The Pease commissary recorded sales of over $24 million in 1988. According to a survey of commissary users, 70 percent of this total or $15 million was due to purchases made by retired military persons and their dependents. There are alternative commissaries at three bases located within a distance of 100 miles from Portsmouth. These are Hanscom AFB at Bedford, Massachusetts, located 65 miles south of Portsmouth; Fort Devens near Ayer, Massachusetts, located 83 miles southwest of Portsmouth; and Brunswick Naval Air Station, Brunswick, Maine, located 58 miles northeast of Portsmouth. Retirees not living in the city of Portsmouth could be closer to one of these alternative bases, depending on their place of residence.

The BX provides goods and services like those available in a small regional shopping center, with exception of groceries which are available at the commissary. At Pease, the BX operates a department store, service station, barber shop, beauty salon, liquor store, theater, optical shop, flower shop, and laundry and dry cleaning facilities. Total sales for goods and services for the year of 1988 were $17 million. An estimated 50 percent or $8.5 million of these sales are to retired military personnel and their dependents. Alternative BX's are located at the same bases identified as having commissaries. **Access will be provided to the AAFES store serving the NHANG.**

## 4.15 OUTDOOR RECREATION

The outdoor recreation resource is affected by both FB-111 aircraft withdrawal and base closure. For this reason, both actions are evaluated to provide appropriate consideration for their combined effects.

Part of this loss will be offset by an increase in visitor days at bases that military and civilian personnel are assigned to and by some shift in activity to area recreation facilities. People who will ultimately be affected by either a loss or change of recreation include military personnel and their dependents, civilian workers with access to the base, and military retirees in the area. The access to base recreational facilities for all three of these groups is dependent on existing or former employment. There is no long-term commitment by the Air Force for continuation of this benefit. To the extent there would be some loss in overall recreation opportunity and use, this loss is not considered significant.

## 4.16 NOISE

Noise levels in adjacent communities and in approaches to Pease AFB will be reduced from those presented in the 1987 AICUZ report for the base under both FB-111 withdrawal and base closure conditions. Adverse effects on existing land uses, which are incompatible with high noise levels and recommended restrictions to future land use development because of noise, will also be diminished. The greatest reduction will result from the combined effect of the two separate actions. Under closure conditions, the CUD's will allow for reconsideration of existing local land use plans and land use regulations such as zoning; however, changes to these documents should not be considered until the final decision on base reuse is made. Premature land use development in the base vicinity could cause problems with or even limit base reuse options.

### 4.16.1 Analysis Methodology

The analysis considered the effects of noise level reduction that

will result from closing Pease AFB but also considered the continued operation of the airfield by the NHANG. Noise levels of three different conditions were projected and mapped using the NOISEMAP computer model at the U.S. Air Force Engineering and Service Center at Tyndall AFB, Florida. The three conditions were the 1985 AICUZ noise level, the noise level following the FB-111 withdrawal, and the base closure noise level. Inputs to the model included all aircraft operations under different conditions. These operations are presented by based aircraft type and transients in table 4.16.1-1.

Table 4.16.1-1
Daily Operations for Different Noise Conditions

| Based Aircraft | 1987 AICUZ | FB-111 Withdrawn | Base Closure NHANG |
|---|---|---|---|
| FB-111 | 75.80 | -- | -- |
| KC-135 | 32.52 | 32.52 | 15.28 |
| T-37 | 37.00 | 37.00 | -- |
| Subtotal | 145.32 | 69.52 | 15.28 |
| Transient Aircraft | 85.18 | 85.18 | 85.18 |
| Total | 230.50 | 154.70 | 100.46 |

Sources: Pease AFB AICUZ Report, March 1987, and FB-111/Base Closure Operational Level Estimates, SAC 1989.

The combined effect of FB-111 withdrawal and base closure were considered in the evaluation of noise impacts. The number of people and type of land use affected were considered in determining the significance of the impact.

The number of people that would experience a decrease in environmental noise of one contour (Ldn 5) or more was estimated using the population 1980 census block data for affected communities. Adjustments to the 1980 population counts were required to reflect growth which had occurred since that time and growth likely to occur by 1990. The adjustments were made in two ways. In urban areas, the 1980 population figures were adjusted based on the percent of growth projected to occur by 1990. Population projections prepared by the New Hampshire Office of State Planning for 1990 were used in making this adjustment. In rural areas, population figures were either adjusted using the same method used for urban areas or adjusted based on recent land use data. The later approach was used in areas where it was apparent substantially higher than average growth had occurred since 1980.

The most recent land use mapping available was used in identifying the type of land use affected. For the most part, this was contained in the 1987 AICUZ report. More recent information was obtained for Strafford County (1988), the town of Greenland (1988), and the town of Rye (1987).

The areas where noise level reductions of Ldn 5 or greater are projected to occur were identified by comparing noise contour maps representing two different conditions. The existing noise conditions as reflected by the 1987 AICUZ report and the base closure noise conditions were used to identify noise changes. The existing conditions were selected for this comparison instead of the conditions projected to occur after FB-111 withdrawal because the closure and withdrawal actions occur within 1 year, have cumulative effects, and impact the same area. Individual noise level contours for the FB-111 withdrawal condition and the base closure conditions are also presented.

### 4.16.2 FB-111 Withdrawal Noise Condition

The FB-111 withdrawal noise condition is that described in the AICUZ report less the FB-111 aircraft operations. The activity levels and aircraft and jet engine types for the remaining aircraft are those presented in that report. These include both Air Force and NHANG KC-135 tanker aircraft, Air Force T-37 trainer aircraft, and transient aircraft. Noise level contours for the FB-111 withdrawal condition are presented on figure 4-1. Aircraft activity levels considered in developing these contours are presented in table 4.16.1-1 with the deletion of 75.80 daily operations of FB-111 aircraft, resulting in a total daily operation level of 154.70.

### 4.16.3 Base Closure Noise Condition

Base closure results in the withdrawal of all Air Force KC-135 and T-37 aircraft in addition to the FB-111 aircraft already removed. The NHANG will continue the operation of its KC-135E and transient flights will continue. Noise level contours for the base closure condition are shown in figure 4-2. Aircraft activity levels considered in developing these contours are presented in table 4.16.1-1. As shown in the table, there would be an additional reduction of 54.24 daily operations resulting in a total daily operation level of 100.46.

### 4.16.4 Noise Impact Analysis

Noise contours showing the area affected by a noise reduction of one 5dB contour or greater for the combined FB-111 withdrawal and base closure noise reduction are shown in figure 4-3. When compared to the 1987 AICUZ report condition, base closure will remove approximately 2,600 people from the area within the Ldn 65 or greater noise level. This figure does not

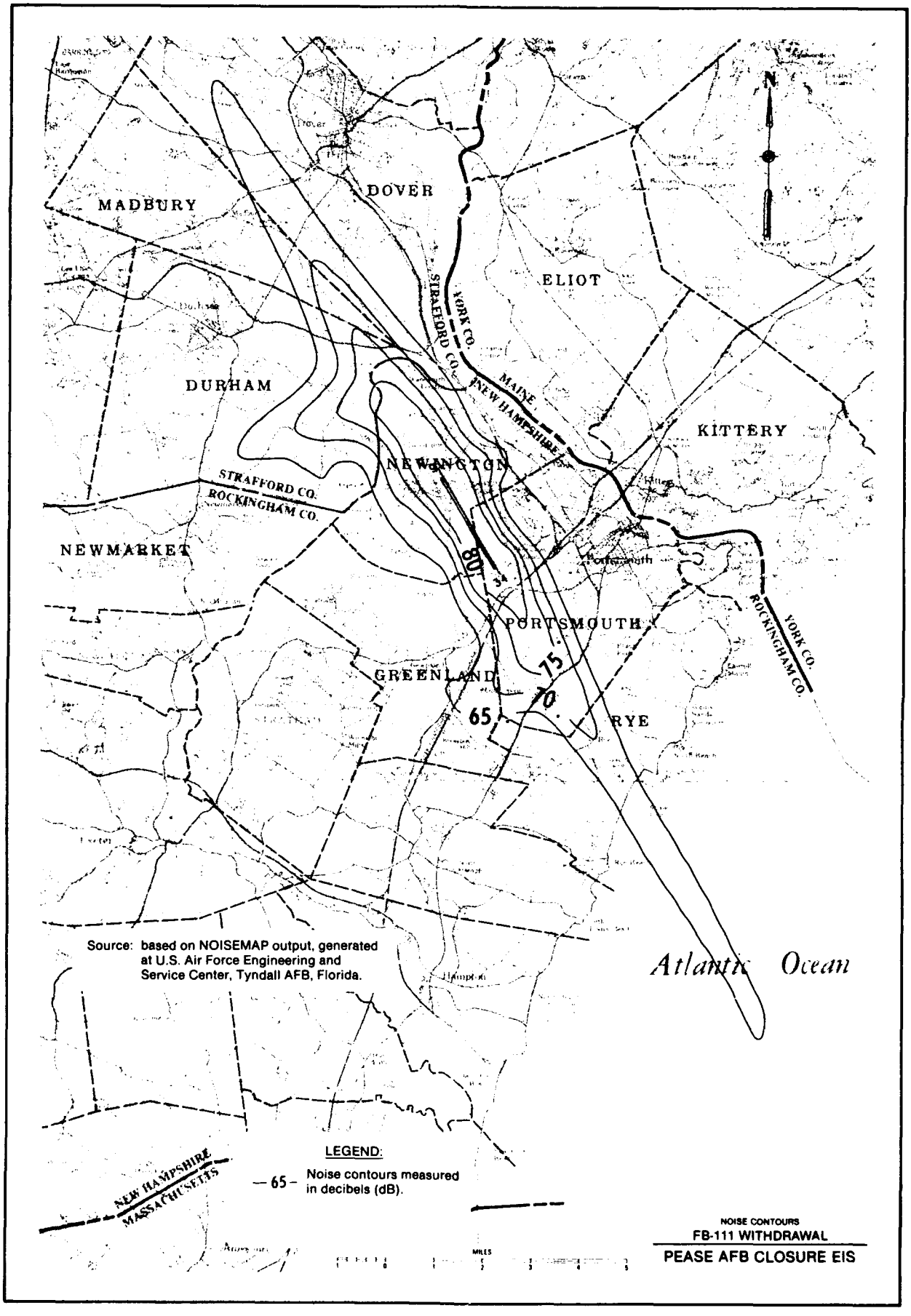

MADBURY
DOVER
ELIOT
DURHAM
KITTERY
NEWINGTON
NEWMARKET
PORTSMOUTH
GREENLAND
RYE
STRAFFORD CO.
YORK CO.
MAINE
NEW HAMPSHIRE
ROCKINGHAM CO.
80
75
70
65
Source: based on NOISEMAP output, generated at U.S. Air Force Engineering and Service Center, Tyndall AFB, Florida.
Atlantic Ocean
LEGEND:
— 65 — Noise contours measured in decibels (dB).
NOISE CONTOURS
FB-111 WITHDRAWAL
PEASE AFB CLOSURE EIS

Figure 4-1

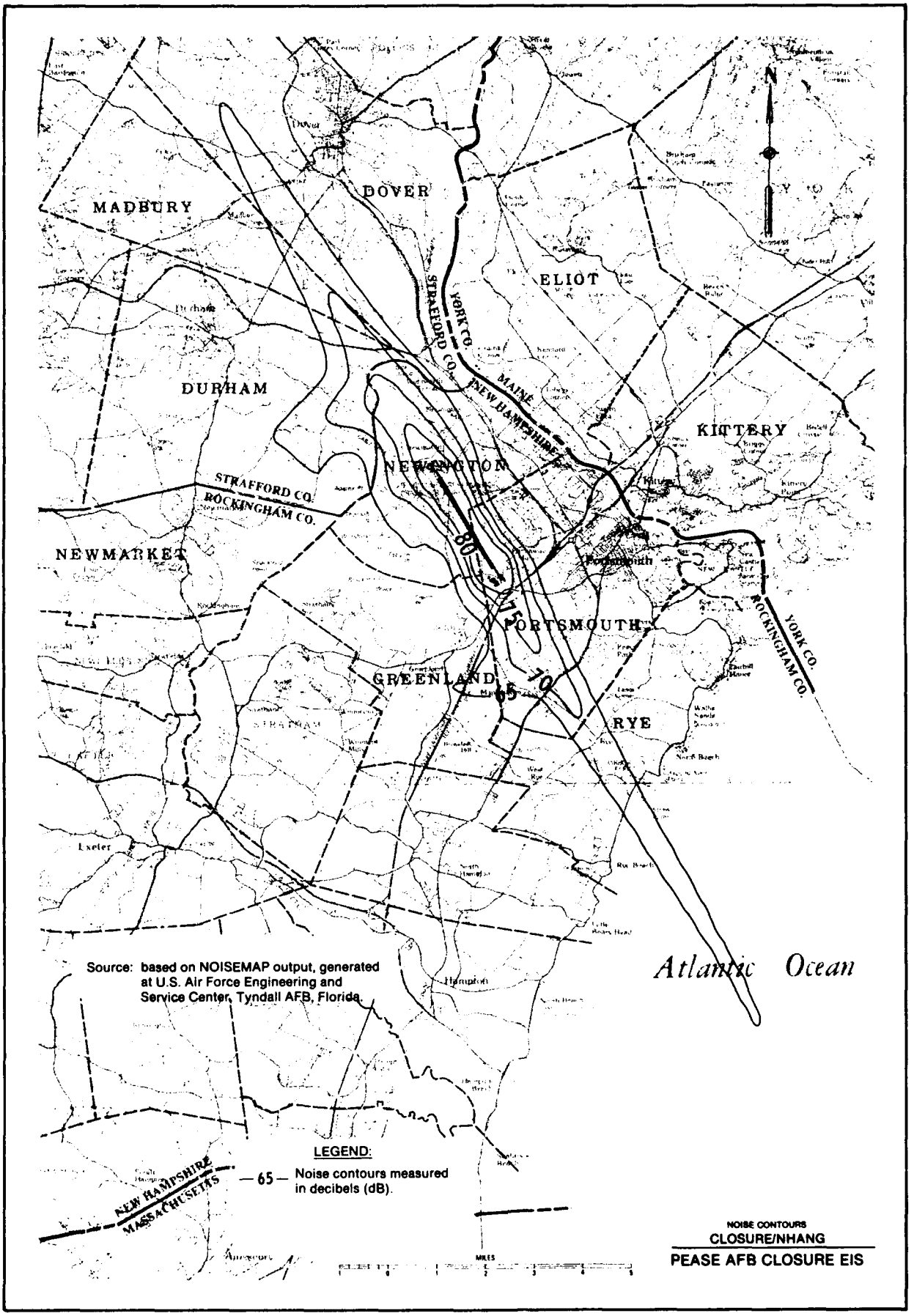

N
MADBURY
DOVER
ELIOT
DURHAM
KITTERY
NEWINGTON
NEWMARKET
PORTSMOUTH
GREENLAND
RYE
Exeter
Hampton
STRAFFORD CO.
ROCKINGHAM CO.
YORK CO.
MAINE
NEW HAMPSHIRE
80
75
70
65
Atlantic Ocean
Source: based on NOISEMAP output, generated at U.S. Air Force Engineering and Service Center, Tyndall AFB, Florida.
LEGEND:
— 65 — Noise contours measured in decibels (dB).
NEW HAMPSHIRE
MASSACHUSETTS
MILES
NOISE CONTOURS
CLOSURE/NHANG
PEASE AFB CLOSURE EIS

Figure 4-2

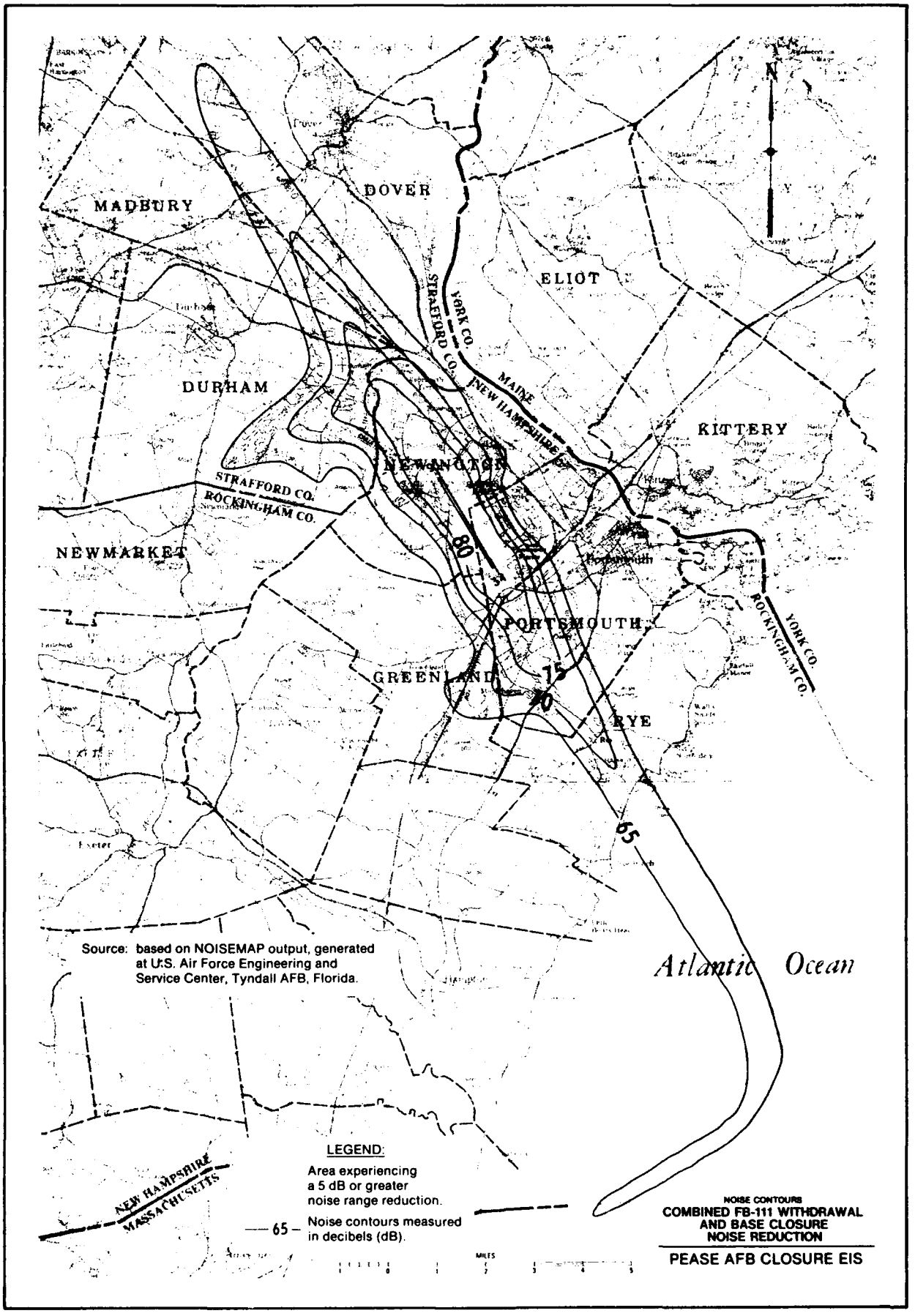

N
MADBURY
DOVER
ELIOT
DURHAM
STRAFFORD CO.
YORK CO.
MAINE
NEW HAMPSHIRE
KITTERY
NEWINGTON
STRAFFORD CO.
ROCKINGHAM CO.
NEWMARKET
80
PORTSMOUTH
ROCKINGHAM CO.
YORK CO.
GREENLAND
75
70
RYE
65
Atlantic Ocean
Source: based on NOISEMAP output, generated at U.S. Air Force Engineering and Service Center, Tyndall AFB, Florida.
NEW HAMPSHIRE
MASSACHUSETTS
LEGEND:
Area experiencing a 5 dB or greater noise range reduction.
65
Noise contours measured in decibels (dB).
MILES
NOISE CONTOURS
COMBINED FB-111 WITHDRAWAL AND BASE CLOSURE NOISE REDUCTION
PEASE AFB CLOSURE EIS

Figure 4-3

include military personnel and dependents living on Pease AFB. This is over 30 percent of the persons estimated to be within this area. In some small areas, a noise level reduction of two contours or 10dB are projected. Much of the area with the largest change in noise level is located in the city of Portsmouth and the town of Newington, which are adjacent to the base. Urban areas affected by the combined noise reduction include single and multifamily residential, commercial, industrial, and public lands and uses. Some uses which are presently considered incompatible due to high levels of noise will be compatible under base closure conditions. In other instances, the noise level is reduced thereby affecting incompatible land use to a lesser degree. Because of the magnitude of the large change in the area of noise contours and the high level of controversy surrounding past noise problems, the beneficial impact of reduced noise levels is considered significant.

Communities should not use the noise levels projected for base closure condition as the basis for reevaluating their land use plans and regulations. The condition does not reflect base reuse which may dramatically affect noise levels in the airfield vicinity. Land use plans and regulations, including zoning, should not be reevaluated to account for noise level changes until a reuse proposal has been selected, evaluated, and adopted as final.

## 4.17 AIRCRAFT SAFETY IMPACTS

Height and obstructions, accident potential and clear zones, and bird hazards would not be changed as a result of closing Pease AFB. Therefore, no impact will occur and additional discussion of these three aircraft safety factors is not merited.

### 4.17.1 Air Space Management

Initial plans for the closure of the base called for the removal of the RAPCON. If removed, the base would essentially become a nonradar approach control airport. Impacts that could result from this change include possible delays to IFR users of both the area's smaller airports and the Pease airfield. A potential reduction in safety involving the crossing of a concentrated VFR corridor along Interstate 95 and the Atlantic Ocean coast and the final approach course at Pease AFB could also be an impact. Much of the VFR traffic in this corridor is under the 3,000 foot m.s.l. altitude for which radar control would be lost. Prior to the completion of the FEIS, the Air Force consulted with the FAA regarding a potential reduction in aircraft safety due to the termination of radar control at Pease AFB. The FAA determined that although the level of traffic activity does not meet its established criteria for the operation of radar service, there are other considerations which compel the provision of such service. These considerations involve safety factors

including the crossing of a concentrated VFR corridor and the final approach, the possible affect of this corridor on the continuation of the NHANG operations, and the Presidential mission at Pease AFB. Following this determination, the Air Force and FAA negotiated an agreement whereby the FAA will operate the Air Force's RAPCON equipment at Pease AFB for a period of at least 2 years following closure. The continued operation of radar service at Pease AFB effectively avoids the adverse impacts which would have resulted from the discontinuance of this service.

The FAA will not operate the precision approach radar (PAR) on runway 16 as part of this agreement. The PAR will be discontinued. The instrument landing system on runway 34 will be operated by the Air Force contractor. The loss of the PAR facility will only affect NHANG and transient aircraft landing at Pease AFB. No significant impact would occur.

### 4.17.2 Air Traffic Safety

As discussed under the Air Space Management section, the discontinuance of radar control at Pease AFB would have worsened the air safety problem caused by concentrated IFR traffic along Interstate 95 and the operation of the airfield. This potential safety impact has been avoided by the agreement that ensures continued operation of the RAPCON facility by the FAA following base closure.

## 4.18 TRANSPORTATION

There are large quantities of equipment, materials, and private and Air Force property presently located at Pease AFB which would be shipped to alternate locations for use or disposal. Items requiring shipping range from specialized aircraft maintenance equipment to household furniture. The peak time for movement will be from June 1990 until March 1991. Most shipping will utilize truck transport because it is the most economic alternative. The direct use of rail would require costly renovation of the base's spur track both on- and off-base. Renovation would include the replacement of track previously removed. Transport by cargo aircraft is costly and normally used only when rapid delivery is critical. All operating aircraft transferred as part of the base closure will be flown to their next assignment.

Because of the large quantities involved, most property at Pease will be shipped by commercial trucking firms. The property will be picked up at homes, work locations, or base supply. Virtually all long-haul shipments will be transported to the interstate highway system by way of the Spaulding Turnpike through either the main gate or industrial gate. Highway capacity should not be a problem provided care is taken to avoid scheduling large shipments during rush hour or on Fridays of summer

weekends. Coordination with the New Hampshire Department of Transportation or its contractor will be required to avoid potential problems with large shipments during the construction of the overpass on Spaulding Turnpike. The construction of this overpass could start during the 1991 reconstruction season.

Roads on-base have recently been rebuilt and no damage from heavy truck traffic in anticipated.

Several shipments including wide loads, hazardous materials, and explosives will be required in vacating the base. These will be shipped in accordance with Federal requirements and appropriate State and local laws. Necessary coordination with regulating agencies will take place. This compliance should ensure that there will be no environmental effects resulting from these activities other than those associated with normal truck transport.

The transportation office will work with local movers to avoid overloading their capacity. It is possible that receiving locations will provide their own shipping vehicles. Because of the flexibility of the trucking industry, no problem with availability is foreseen. There may be additional expense if backhaul shipments to the area in proportion to the shipping requirements of base closure are not available.

# CHAPTER 5 CONSULTATION AND COORDINATION

## 5.1 GOVERNMENT AGENCIES AND ORGANIZATIONS

The following government agencies and organizations provided information or were contacted for information during the preparation of the DEIS. The subject matter of the information is also presented in this listing.

### 5.1.1 Federal Government

USAF, Headquarters - closure policy
USAF, Strategic Air Command - description of action and baseline conditions
USAF, Pease AFB - description of action and baseline conditions
Air Directorate, National Guard Bureau - description of NHANG action
U.S. Environmental Protection Agency - scoping
U.S. Department of Interior, Fish and Wildlife Service - scoping, Endangered Species Act, effects of aircraft noise on wildlife
U.S. Department of Interior, National Park Service - scoping
U.S. Department of Transportation, Federal Aviation Administration - scoping
U.S. Department of Commerce, National Oceanic and Atmospheric Administration - scoping, Great Bay National Estuarine Research Reserve Management Plan, National Marine Pollution Program
U.S. Department of Agriculture, Soil Conservation Service - soil survey
U.S. Department of Health and Human Services - scoping

### 5.1.2 State Government

New Hampshire Department of Administrative Services - scoping
New Hampshire Attorney General - scoping
New Hampshire Department of Environmental Services - scoping
New Hampshire Air Resources Commission - air quality
New Hampshire State Historic Preservation Office - cultural resources
New Hampshire Department of Employment Security - scoping
New Hampshire State Representatives - scoping
New Hampshire Office of State Planning - population and housing data and selected planning and zoning regulations
New Hampshire Department of Employment Security - labor statistics
Maine State Planning Office - scoping
Maine Department of Labor, Bureau of Employment Security - labor statistics

### 5.1.3 Local Government

Newington Board of Selectmen - scoping
Newington Zoning Administrator - town zoning ordinance
Portsmouth Mayor - scoping
Portsmouth Planning Director - scoping
Portsmouth City Manager - scoping
Portsmouth City Councilman - scoping
Pease Redevelopment Commission - scoping

## 5.2 PREPARERS

The FEIS was prepared by the U.S. Army Corps of Engineers, Omaha District for the U.S. Air Force, Strategic Air Command. The following is a listing of the individual preparers of the FEIS. These individuals made a significant contribution to the development, preparation, or drafting of the document.

| Name | Discipline/ Expertise | Experience | Role in Preparing EIS |
|---|---|---|---|
| Richard Miner | Sociology, Project Director | 15 years, EIS Studies | EIS Reviewer |
| Robert Nebel | Biology/Ecology, Project Management | 10 years, EIS Studies | EIS Manager, Environmental Sections |
| Gene Sturm | Urban Planning, Socioeconomic Analysis | 7 years, EIS Studies | Socioeconomic Sections |
| Ellen Cummings | Archeologist | 16 years, EIS Studies | Historic Resource Sections |

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# APPENDIX A

# HAZARDOUS MATERIALS AND THEIR LOCATION

HEADQUARTERS, 509TH BOMBARDMENT WING (SAC)
Pease Air Force Base, New Hampshire 03803-5000
1 August 1985

ANNEX "C"

509BMW OPlan 19-1

MATERIALS SUBJECT TO SPILLAGE

1. GENERAL: This annex summarizes the materials on hand which are subject to accidental spillage.

2. MATERIAL INFORMATION: The chart flow includes non-hazardous oils in quantities over 55-gallons and all hazardous materials:

| LOCATION (BLDG NO) | MATERIAL STORED | QUANTITY (GAL) | STORAGE METHOD | ORGANIZATION RESPONSIBLE |
|---|---|---|---|---|
| P.H. 3 (321) | JP-4 | 300,000 | U.G. Tanks (6) | LGSF |
| P.H. 4 (325) | JP-4 | 200,000 | U.G. Tanks (4) | LGSF |
| P.H. 5 (327) | JP-4 | 200,000 | U.G. Tanks (4) | LGSF |
| P.H. 6 (330) | JP-4 | 200,000 | U.G. Tanks (4) | LGSF |
| P.H. 7 (339) | JP-4 | 200,000 | U.G. Tanks (4) | LGSF |
| P.H. 8 (343) | Recoverable JP-4 | 25,000 | U.G. Tank | LGSF |
| P.H. 9 (347) | Mogas | 50,000 | U.G. Tank | DEMFP |
| | Diesel | 50,000 | U.G. Tank | DEMFP |
| P.H. 10 (351) | JP-4 | 300,000 | U.G. Tanks (6) | LGSF |
| Bulk Storage | JP-4 | 5,000,000 | A.G. Tanks (2) | LGSF |
| | JP-7 | 500,000 | A.G. Tank | LGSF |
| Bulk Storage Area | JPTS | 25,000 | U.G. Tank | LGSF |
| | De-Icing Fluid | 75,000 | U.G. Tanks (3) | LGSF |
| | Mogas | 15,000 | U.G. Tank | LGSF |
| | Diesel | 25,000 | U.G. Tank | LGSF |

| LOCATION (BLDG NO) | MATERIAL STORED | QUANTITY (GAL) | STORAGE METHOD | ORGANIZATION RESPONSIBLE |
|---|---|---|---|---|
| Base Service Sta | Mogas | 40,000 | U.G. Tanks (4) | LGSF |
| | Diesel | 15,000 | U.G. Tank | LGSF |
| Fire Training Area | Contam JP-4 | 5,000 | A.G. Tank | DEF |
| 1 | No. 2 Oil | 500 | U.G. Tank | DEMM |
| 33(Outside) | No. 2 Oil | 1,000 | U.G. Tank | DEMM |
| | Mogas | 30,000 | U.G. Tanks(3) | SVE |
| | Lube Oil | 500 | Qt Cans in Shed | SVE |
| | Waste Oil | 500 | U.G. Tank | SVE |
| 33(Inside) | Lubricants | 55 | 55 - Gal Drum | SVE |
| | Lube Oil | 500 | Qt cans on Shelves | SVE |
| 66 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| 68 | No. 2 Oil | 1,000 | U.G. Tank | DEMM |
| | Diesel | 500 | U.G. Tank | DEMM |
| 86 | No. 2 Oil | 550 | U.G. Tank | DEMM |
| 89 | No. 2 Oil | 25,000 | U.G. Tank | DEMM |
| | or Diesel | | | |
| | No. 2 Oil | 8,000 | U.G. Tank | DEMM |
| | or Diesel | | | |
| 90 | Diesel | 1,000 | U.G. Tanks (2) | DEME |
| 95 | No. 2 Oil | 12,560 | U.G. Tank | DEMM |
| 99 | No. 2 Oil | 6,280 | U.G. Tank | DEMM |
| | No. 2 Oil | 1,000 | U.G. Tank | DEMM |
| 103 | Waste Oil | 1,500 | U.G. Tank | SSRV |

| LOCATION (BLDG NO) | MATERIAL STORED | QUANTITY (GAL) | STORAGE METHOD | ORGANIZATION RESPONSIBLE |
|---|---|---|---|---|
| 116 | PCB Fluid | 210 | Transformer | DEME |
| 117 | PCB Fluid | 105 | Transformer | DEME |
| 119 | P-D-680 | 110 | 55-Gal Drums | MAFP |
| | Carbon Remover | 55 | 55-Gal Drums | MAFP |
| | Kerosene | 110 | 55-Gal Drums | MAFP |
| | Waste 7808 Oil | 55 | 55-Gal Drum | MAFP |
| | Waste Hydr. Fluid | 55 | 55-Gal Drum | MAFP |
| | Waste JP-4 | 55 | 55-Gal Drum | MAFP |
| | Paint Thinner | 100 | 5-Gal Cans | MAFFC |
| 120 | Paint Stripper | 55 | 55-Gal Drum | MAFFC |
| | Paint Thinner | 20 | 5-Gal Cans | MAFFC |
| | P-D-680 | 30 | Cleaner Tank | MAFAP |
| | PCB Fluid | 105 | Transformer | DEME |
| 122(Outside) | Lube Oil | 825 | 55-Gal Drums | LGSD |
| | Paint Stripper | 165 | 55-Gal Drums | LGSD |
| | Paint Thinner | 145 | 5-Gal Cans | LGSD |
| | Solvents | 2,475 | 55-Gals Drums | LGSD |
| | Hydraulic Fluid | 110 | 55-Gals Drums | LGSD |
| | Dentured Alcohol | 110 | 55-Gals Drums | LGSD |
| (Inside) | PCB Fluid | 198 | Transformer | DEME |
| 124 | No. 6 Oil | 400,000 | A.G. Tank | DEMM |
| | No. 6 Oil | 30,000 | U.G. Tank | DEMM |
| | PCB Fluid | 678 | Transformers (2) | DEME |
| 130(Inside) | Lube Oil | 660 | 55-Gals Drums | LGT |
| | Battery Acid | 48 | 1-Gal Cans | LGT |
| | PCB Fluid | 420 | Transformer | DEME |

| LOCATION (BLDG NO) | MATERIAL STORED | QUANTITY (GAL) | STORAGE METHOD | ORGANIZATION RESPONSIBLE |
|---|---|---|---|---|
| 130(Outside) | Lube Oil | 770 | 55-Gal Drums | LGT |
| (Outside-Seasonal) | Paint Thinner | 21 | 1-Gal Cans | LGT |
| 141 | No. 2 Oil | 500 | U.G. Tank | DEMM |
| 142 | No. 2 Oil | 850 | U.G. Tank | DEMM |
| 143 | No. 2 Oil | 750 | U.G. Tank | DEMM |
| 144 | No. 2 Oil | 1,000 | U.G. Tank | DEMM |
| 146 | No. 2 Oil | 275 | A.G. Tank | DEMM |
| 149 | No. 2 Oil | 1,000 | A.G. Tank | DEMM |
| 152(Outside) | Lube Oil | 220 | 55-Gal Drums | DEME |
| 152(Inside) | Lube Oil | 110 | 55-Gal Drums | DEME |
| | Battery Acid | 12 | 1-Gal Boxes | DEME |
| 202 | Diesel | 275 | A.G. Tank | DEME |
| | Diesel | 3,000 | U.G. Tank | DEME |
| 207 | No. 2 Oil | 1,000 | U.G.Tank | DEMM |
| 212(Outside) | Trichloroethylene | 55 | 55-Gal Drum | MAOG |
| | Lube Oil | 110 | 55-Gal Drums | MAOG |
| | Dentured Alcohol | 55 | 55-Gal Drum | MAOG |
| | Reclaimable JP-4 | 900 | Bowsers (3) | MAOG |
| | Reclaimable JP-4 | 500 | Bowser | MAOG |
| | Waste 7808 Oil | 500 | Bowser | MAOG |
| | Wast Hyd. Fluid | 300 | Bowser | MAOG |
| | Waste JP-4 | 500 | Bowser | MAOG |

| LOCATION (BLDG NO) | MATERIAL STORED | QUANTITY (GAL) | STORAGE METHOD | ORGANIZATION RESPONSIBLE |
|---|---|---|---|---|
| 213 (Outside) | Lube Oil | 165 | 55-Gal Drums | MAFG |
| | P-D-680 | 165 | 55-Gal Drums | MAFG |
| | Dentured Alcohol | 165 | 55-Gal Drums | MAFG |
| | Hydraulic Fluid | 144 | 1-Gal Cans | MAFG |
| | 7808 Oil | 18 | Qt Cans | MAFG |
| | Waste Mogas | 300 | Bowsers | MAFG |
| | Waste JP-4 | 300 | Bowser | MAFG |
| | Waste Oils | 275 | Bowser | MAFG |
| | JP-4 | 4,000 | U.G. Tank | MAFG |
| | Mogas | 2,000 | U.G. Tank | MAFG |
| | Diesel | 2,000 | U.G. Tank | MAFG |
| (Inside) | JP-4 | 55 | 55-Gal Drum | MAFG |
| | Mogas | 55 | 55-Gal Drum | MAFG |
| | Lube Oil | 110 | 55-Gal Drum | MAFG |
| 215 (Outside) | Hydraulic Fluid | 75 | 1-Qt Cans | MAOB |
| | Lube Oil | 75 | 1-Qt Cans | MAOB |
| (Inside) | Rust Inhibitor | 55 | 55-Gal Drum | MAOB |
| | Glycol | 55 | 55-Gal Drum | MAOB |
| 222 (Outside) | No. 2 Oil | 550 | U.G. Tank | DEMFM |
| | JP-4 | 5,000 | U.G. Tank | MAFP |
| | Waste Fuel | 500 | U.G. Separator | MAFP |
| | 7808 Oil | 40 | 1-Qt Cans | MAFP |
| | 1010 Oil | 50 | 1-Gal Cans | MAFP |
| | 1010 Oil | 55 | 55-Gal Drum | MAFP |
| 225 | Diesel | 100 | A.G. Tank | DEME |
| | Diesel | 500 | U.G. Tank | DEME |

| LOCATION (BLDG NO) | MATERIAL STORED | QUANTITY (GAL) | STORAGE METHOD | ORGANIZATION RESPONSIBLE |
|---|---|---|---|---|
| 227 | Paint Stripper | 110 | 55-Gal Drums | MAFAR |
| | Waste Paint Stripper | 330 | 55-Gal Drums | MAFAR |
| | Paint Stripper | 110 | Stripping Tank | MAFAR |
| | P-D-680 | 6,000 | U.G. Tank | MAOS |
| | P-D-680 | 440 | 55-Gal Drums | MAOS |
| | PCB Fluid | 91 | Transformer | DEME |
| 232 | Diesel | 1,000 | U.G. Tank | DEME |
| 233 | Diesel | 275 | A.G. Tank | DEME |
| | Diesel | 500 | U.G. Tank | DEME |
| 234 | No. 2 Oil | 1,000 | U.G. Tank | DEMM |
| 241 | Dentured Alcohol | 55 | 55-Gal Drum | LGTM |
| | Lube Oil | 275 | 55-Gal Drums | LGTM |
| | Chlorobromomethane | 20 | 5-Gal Cans | DEF |
| 245 | Lube Oil | 55 | 55-Gal Drum | LGSF |
| | Dentured Alcohol | 55 | 55-Gal Drum | LGSF |
| | JP-4 | 250 | Bowser | LGSF |
| | Rust Inhibitor | 55 | 55-Gal Drum | LGSF |
| 249 | Waste Oil | 55 | 55-Gal Drum | LGTM |
| | Lube Oil | 110 | 55-Gal Drums | LGTM |
| | Trans. Fluid | 6 | Qt Cans | LGTM |
| | Waste Fuel | 1,000 | U.G. Tank | LGTM |
| 252 | Mogas | 600 | Bowser | 157 CAM SQ/MAFG |
| | Lube Oil | 55 | 55-Gal Drum | 157 CAM SQ/MAFG |
| | P-D-680 | 55 | 55-Gal Drum | 157 CAM SQ/MAFG |
| | Paint Thinner | 1 | 1-Gal Can | 157 CAM SQ/MAFG |
| | Waste JP-4 | 575 | Bowser | 157 CAM SQ/MAFG |

| LOCATION (BLDG NO) | MATERIAL STORED | QUANTITY (GAL) | STORAGE METHOD | ORGANIZATION RESPONSIBLE |
|---|---|---|---|---|
| 253 | 7808 Oil | 6 | 1-Qt Cans | 157 CAM SQ/MAFFC |
| | Waste Oil | 220 | 55-Gal Drums | 157 CAM SQ/MAFFC |
| | Paint Stripper | 5 | 1-Gal Cans | 157 CAM SQ/MAFFC |
| | Paint Stripper | 10 | 5-Gal Cans | 157 CAM SQ/MAFFC |
| | Paint Thinner | 10 | 1-Gal Cans | 157 CAM SQ/MAFFC |
| | Paint Thinner | 100 | 5-Gal Cans | 157 CAM SQ/MAFFC |
| | Waste Paint Thinner | 10 | 5-Gal Cans | 157 CAM SQ/MAFFC |
| | Waste Paint Stripper | 5 | 5-Gal Cans | 157 CAM SQ/MAFFC |
| 254 | Waste JP-4 | 100 | Bowser | 157 CAM SQ/MAOE |
| | Reclaimable JP-4 | 250 | Bowser | 157 CAM SQ/MAOE |
| | 7808 Oil | 48 | 1-Qt Cans | 157 CAM SQ/MAOE |
| | P-D-680 | 55 | 55-Gal Drum | 157 CAM SQ/MAOE |
| | Paint Thinner | 8 | 1-Gal Cans | 157 CAM SQ/MAOE |
| 258 | Mogas | 10,000 | U.G. Tank | 157 RMS/LGTM |
| | Diesel | 8,000 | U.G. Tank | 157 RMS/LGTM |
| | Lube Oil | 165 | 55-Gal Drums | 157 RMS/LGTM |
| | Waste Oil | 220 | 55-Gal Drums | 157 RMS/LGTM |
| | Waste Oil | 650 | U.G. Tank | 157 RMS/LGTM |
| 307 | No. 2 Oil | 500 | U.G. Tank | DEMM |
| 354 | Diesel | 1,000 | U.G. Tank | DEME |
| 359 | Diesel | 1,000 | U.G. Tank | DEME |
| S-369 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| S-370 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| S-371 | No. 2 Oil | 550 | U.G. Tanks (2) | DEMM |
| S-373 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| S-374 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| S-375 | No. 2 Oil | 275 | U.G. Tank | DEMM |

| LOCATION (BLDG NO) | MATERIAL STORED | QUANTITY (GAL) | STORAGE METHOD | ORGANIZATION RESPONSIBLE |
|---|---|---|---|---|
| S-377 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| S-378 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| S-379 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| S-380 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| 399 | Mogas | 275 | U.G. Tank | DEMP |
| | Diesel | 275 | U.G. Tank | DEMP |
| 400 | No. 2 Oil | 550 | U.G. Tank | DEMM |
| 410 | Diesel | 1,000 | U.G. Tank | DEME |
| | No. 2 Oil | 500 | U.G. Tank | DEMM |
| 416 | Diesel | 275 | U.G. Tank | DEME |
| 420 | Diesel | 1,000 | U.G. Tank | DEME |
| | No. 2 Oil | 1,000 | U.G. Tank | DEMM |
| 423 | No. 2 Oil | 275 | U.G. Tank | DEMM |
| 427 | No. 2 Oil | 550 | U.G. Tanks (2) | DEMM |
| 430 | No. 2 Oil | 550 | U.G. Tanks (2) | DEMM |
| 431 | Mogas | 500 | A.G. Tank | SPO |
| | Diesel | 275 | A.G. Tank | DEMM |
| 432 | Diesel | 3,000 | U.G. Tank | DEME |
| 434 | No. 2 Oil | 500 | U.G. Tank | DEMM |
| 435 | No. 2 Oil | 500 | U.G. Tank | DEMM |
| 437 | No. 2 Oil | 1,000 | U.G. Tank | DEMM |
| 457 | No. 2 Oil | 500 | U.G. Tank | DEMM |
| 466 | No. 2 Oil | 1,000 | U.G. Tank | DEMM |
| 468 | No. 2 Oil | 2,000 | U.G. Tank | DEMM |

# APPENDIX B

# HAZARDOUS WASTES AND THEIR PAST LOCATIONS OF ACCUMULATION

| STORAGE SITE BUILDING | DISPOSAL DATE | E P A WASTE CODE | DESCRIPTION OF ITEM |
|---|---|---|---|
| | 87/03/05 | | |
| | 87/03/05 | | |
| | 87/03/05 | | CORROSIVE |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 5 | 88/10/11 | P008 | 4-AMINOPYRIDINE 1% |
| 5 | 88/10/11 | P008 | 4-AMINOPYRIDINE 25% |
| 5 | 88/10/11 | P008 | 4-AMINOPYRIDINE 0.5% |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 6 | /03JUL | F002 | BLANCROLA/DEVELOPER |
| 6 | 87/12/09 | D001 | WASTE SOLVENT 5 GL |
| 6 | 88/06/20 | D001 | SOLVENT NOS 5GL |
| 6 | 88/11/08 | D001 | BLANKROLA/DEVELOPER |
| 6 | 89/03/01 | D001 | BLANKOCA/DEVELOPER |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 70 | 88/02/11 | D001 | JP-4 ABSORPTION PILLOWS |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 86 | 87/04/29 | U151 | MERCURY (ELEMENT) |
| 86 | 88/06/29 | U151 | MERCURY (ELEMENT) |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 93 | 87/10/07 | U226 | TRICHLORETHENE |
| 93 | 88/06/29 | D002 | PHENOL USP ACID |
| 93 | 88/06/29 | F005 | BENZOIN TINCTURE |
| 93 | 88/06/29 | F005 | FLAMABLE SOLVENT |
| 93 | 88/06/29 | F005 | FLAMABLE 0 DEG CENT |
| 93 | 88/06/29 | F005 | FORMELDEHYDE |
| 93 | 88/06/29 | F005 | FORMALDEHY (2%SOLUTION) |
| 93 | 88/06/29 | F005 | FLAMMABLE "KLEENAL" 1/2PT |

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DISPOSAL FROM DD 1348-1 TOTAL ACTIVITY
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| STORAGE SITE BUILDING | DISPOSAL DATE | E WASTE | P A CODE | DESCRIPTION OF ITEM |
|---|---|---|---|---|
| 93 | 88/06/29 | P105 | | SODIUM AZIDE (B-143) |
| 93 | 88/06/29 | P105 | | SODIUM AZIDE |
| 93 | 88/06/29 | U151 | | MERCURY (ELEMENT) 1.75LBS |
| 93 | 88/08/18 | D001 | | FORMALDEHYDE (2%SOLUTION) |
| 93 | 88/11/08 | D009 | | WASTE MERCURY |
| 93 | 88/12/06 | D001 | | FORMALDEHYDE |
| 93 | 88/12/06 | U122 | | FORMALDEHYDE 2% |
| 93 | 89/01/26 | U115 | | ETHYLENE OXIDE |
| 93 | 89/01/26 | U122 | | FORMALDEHYDE (2%SOLUTION) |
| 93 | 89/01/26 | U122 | | FORMALDEHYDE 2%SOLUTION |
| 93 | 89/03/01 | D001 | | FORMALDEHYDE 2% |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 119 | 87/03/05 | D001 | | FLAMMABLE |
| 119 | 87/07/31 | D002 | | SEDUUM HYDROXIDE WASTE |
| 119 | 88/09/21 | D002 | | CARBON REMOVER 55GAL |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 120 | /13JUN | D006 | | BATT NICAD |
| 120 | 87/03/05 | D001 | | FLAMMABLE |
| 120 | 87/04/29 | D001 | | DEVELOPER/NAPTHA |
| 120 | 87/04/29 | D001 | | MEK PAINT THINNER |
| 120 | 87/05/20 | D001 | | PAINT |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 121 | 87/03/05 | D001 | | FLAMMABLE |
| 121 | 87/03/05 | D002 | | CORROSIVE |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 122 | 87/03/05 | D001 | | PAINT |
| 122 | 87/03/05 | D001 | | WASTE OIL |
| 122 | 88/05/27 | F002 | | METHYLENE CHLORIDE 1650GL |
| 122 | 88/05/27 | F002 | | METHYLENE CHLORIDE SPILL |
| 122 | 88/09/13 | | | PRIMER ADHESIVE |
| 122 | 88/09/21 | D002 | | SULFURIC ACID |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 130 | 87/04/29 | D001 | | THINNER PAINT |
| 130 | 87/04/29 | D001 | | THINNER PAINT |

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| STORAGE SITE BUILDING | DISPOSAL DATE | E P A WASTE CODE | DESCRIPTION OF ITEM |
|---|---|---|---|
| 130 | 87/12/09 | D001 | WASTE THINNER DOPE & LACQ |
| 130 | 88/06/29 | D001 | THINNER PAINT |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 141 | 87/10/07 | D001 | INSECTICIDE DIAZINON 47% |
| 141 | 88/02/05 | U036 | CHLORDANE |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 149 | 87/03/05 | D003 | LITHIUM BATTERY |
| 149 | 87/08/24 | U240 | 2,4-DICHLOROPHENDXYACETIC |
| 149 | 87/10/07 | U115 | ETHYLENE OXIDE AEROSOL |
| 149 | 87/10/07 | U115 | ETHYLENE OXIDE AEROSOL |
| 149 | 88/02/11 | D001 | WASTE DIESEL FUEL |
| 149 | 88/02/11 | D008 | WAST PAINT LEAD (11830LB) |
| 149 | 88/06/29 | D001 | PAINT OIL BASE 1 GL CONT. |
| 149 | 88/06/29 | D001 | PAINT OIL BASE 5 GL CONT. |
| 149 | 88/06/29 | D008 | EMPTY CRUSHED CANS |
| 149 | 88/08/18 | 029L | COIL RITE CONDENSER CLENR |
| 149 | 88/09/13 | | LUBRICANT |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 151 | /16JUL | F002 | CONT'D SOIL/DEBRIS (5900) |
| 151 | /20DEC | F027 | PCB TR 37.5KVA 50/500 PPM |
| 151 | /20DEC | F027 | PCB TR 25KVA 50/500PPM |
| 151 | /20DEC | F027 | PCB TR 75KVA 50/500PPM |
| 151 | 88/12/06 | U248 | RODENTICIDE BAIT |
| 151 | 89/01/26 | F002 | PETROLIUM DISTILIAT |
| 151 | 89/01/26 | U248 | DIPHACINPARAF |
| 151 | 89/01/26 | U248 | HUBSTATE #147 |
| 151 | 89/03/10 | F002 | PT REMOVER ETHANOLAMINE |
| 151 | 89/03/10 | F005 | USED OIL & SOLVENT |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 160 | 88/09/26 | D001 | JP-4 SLUDGE/WATER (1724) |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 214 | /01JUN | F027 | PCB DEBRIS |
| 214 | 89/01/26 | D001 | JOINT SEALER CONC. |

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MANAGEMENT OF WASTE ITEMS FOR (GCG31)
DISPOSAL FROM DD 1348-1 TOTAL ACTIVITY
HAZARDOUS WASTE SUMMARY <3 MAY 1989>

| STORAGE SITE BUILDING | DISPOSAL DATE | E WASTE | P A CODE | DESCRIPTION OF ITEM |
|---|---|---|---|---|
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 226 | /02JUL | F002 | | EPOXY PAINT STRIPPR |
| 226 | /02JUL | F005 | | MEK |
| 226 | /06JUL | F005 | | MEK |
| 226 | /19JUN | F005 | | MEK |
| 226 | /24JUL | F005 | | MEK |
| 226 | 87/07/31 | D002 | | ETHANOLOMINE WASTE |
| 226 | 87/07/31 | F003 | | METHYL ETHYL KETONE |
| 226 | 87/10/07 | F003 | | MEK/PAINT/THINNER |
| 226 | 87/12/09 | D001 | | EPOXIE PAINT STRIPPER |
| 226 | 87/12/09 | D001 | | PAINT STRIPPER |
| 226 | 87/12/09 | F005 | | METHYL ETHYL KETONE |
| 226 | 87/12/09 | F005 | | WASTE MEK |
| 226 | 88/02/11 | F005 | | MEK |
| 226 | 88/06/08 | D001 | | METHYL ETHYL KETONE |
| 226 | 88/06/08 | D001 | | METHYL ETHYL KETONE |
| 226 | 88/06/29 | D002 | | WASTE PAINT REMOVER |
| 226 | 88/06/29 | D002 | | EPOXIE PAINT STRIPPER |
| 226 | 88/06/29 | F005 | | SOLVENT NOS 5GL |
| 226 | 88/06/29 | F005 | | WASTE MEK THINNER PAINT |
| 226 | 88/06/29 | F005 | | METHY ETHYL KETONE |
| 226 | 88/06/29 | M001 | | EMULSIFIER |
| 226 | 88/08/18 | F005 | | METHY ETHYL KETONE |
| 226 | 88/08/18 | F005 | | METHYL ETHYL KETONE |
| 226 | 88/09/21 | F005 | | METHYL ETHYL KETONE |
| 226 | 88/09/21 | F005 | | METHY ETHYL KETONE |
| 226 | 88/10/11 | F005 | | METHYL ETHYL KEYTONE |
| 226 | 88/11/08 | F005 | | METHYL ETHYL KETONE |
| 226 | 88/11/08 | F005 | | METHYL ETHYL KETONE |
| 226 | 88/12/06 | F002 | | PAINT STRIPR |
| 226 | 88/12/06 | F005 | | MEK |
| 226 | 88/12/06 | F005 | | MEK |
| 226 | 89/01/26 | F005 | | MEK |
| 226 | 89/01/26 | F005 | | MEK |
| 226 | 89/03/01 | F005 | | MEK |
| 226 | 89/03/10 | F005 | | MEK |
| 226 | 89/03/10 | F005 | | MEK |
| 226 | 89/04/10 | F005 | | MEK |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 227 | /06JUL | D006 | | PD680/CADMIUM |
| 227 | 87/03/19 | D006 | | RINSE WATER/CADMIUM |
| 227 | 87/10/07 | D006 | | WASTE STRIPPER MAT W/CADM |
| 227 | 87/10/07 | D006 | | WASTE CADMIUM |
| 227 | 87/12/09 | D006 | | WASTE RINCE WATER |
| 227 | 88/01/13 | | | WASTE CADMIUM D006 |
| 227 | 88/02/11 | D006 | | PROCESSING LIQUID |

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| STORAGE SITE BUILDING | DISPOSAL DATE | E P A WASTE CODE | DESCRIPTION OF ITEM |
|---|---|---|---|
| 227 | 88/06/29 | D006 | WASTE RINS WATER/CADMIUM |
| 227 | 88/06/29 | D006 | STRIPPER/CADMIUM |
| 227 | 88/06/29 | D006 | WASTE RINS WATER/CADMIUM |
| 227 | 88/09/21 | D001 | PD680/CADMIUM |
| 227 | 88/09/21 | D006 | RINSE WATER/CADMIUM |
| 227 | 88/10/11 | D006 | WASTE WATER/CADMIUM |
| 227 | 88/11/08 | 002L | RINSE WATER/CADMIUM |
| 227 | 88/12/06 | D006 | STRIPPER/CADMIUM |
| 227 | 88/12/06 | D006 | RINSE WATER/CADMIUM |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 251 | /30MAY | D001 | ISOPROPYL ALCOHOL |
| 251 | 88/06/29 | D001 | PD-680/ISOPROPYL ALCOHOL |
| 251 | 88/09/21 | D001 | PD-680/ISOPROPYL ALCOHOL |
| 251 | 88/09/21 | D001 | PD680/ISOPROPYL ALCOHOL |
| 251 | 88/09/21 | F005 | PD680/ISOPROPYL AL'OL/MEK |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 253 | 88/09/13 | | AMMCITRA |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 259 | 87/10/07 | D001 | LEAK DETECTION AEROSOL |
| 259 | 87/10/07 | D001 | PAINT AEROSOL |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 262 | | | PAINT OLIVE DRAB |
| 262 | 88/06/29 | D001 | SEALING COMP 2.5 OZ |
| 262 | 88/06/29 | D001 | SEALING CMPND 1/2PT |
| 262 | 88/06/29 | D001 | SEALANT RUBBER 1/2PT |
| 262 | 88/06/29 | F001 | AEROSOL TRICHLOETHANE |
| 262 | 88/10/11 | D001 | LACQUER WHITE |
| 262 | 88/10/11 | D001 | LACQUER WHITE |
| 262 | 88/10/12 | D001 | ENAMAL WHITE SPRAY |
| 262 | 88/10/12 | D001 | AD/POXY/RESIN |
| 262 | 88/10/12 | D001 | COMPOUND SEALING |
| 262 | 88/10/12 | D001 | COATING RED ORANGE |
| 262 | 88/10/12 | D001 | ENAMEL WHITE |
| 262 | 88/10/12 | D001 | LACQUER ORANGE |
| 262 | 88/10/12 | D002 | PAINT REMOVER |
| 262 | RTD/SALE | | AEROSOL ENAMEL YELLOW |
| 262 | RTD/SALE | | REMOVER PAINT B&BSTRIPPER |

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DISPOSAL FROM DD 1348-1 TOTAL ACTIVITY
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| STORAGE SITE BUILDING | DISPOSAL DATE | E WASTE | P A CODE | DESCRIPTION OF ITEM |
|---|---|---|---|---|
| 262 | RTD/SALE | | | CORR/PREV 16OZ |
| 262 | ZZDRMO | | | SEALING COMPOUND 8OZ |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 266 | 88/10/11 | F005 | | SPILL RESIDUE MEK N.O.S. |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 466 | 88/06/29 | F005 | | METHYL ETHYL KETONE |
| 466 | 88/06/29 | F005 | | PAINT THINNER |
| 466 | 88/06/29 | F005 | | XYLENE |
| 466 | 88/06/29 | F005 | | TOLUENE |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| IRP | 88/10/04 | 029L | | TAR SOLUTION COMBUSTIBLE |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| WSA | 87/03/05 | D002 | | CORROSIVE |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| BASE | 87/11/23 | D001 | | J-P4 SEPERATORS 21760 LB |
| BASE | 87/11/25 | D001 | | J-P4 SEPERATORS 2760 LB |
| BASE | 87/12/08 | D001 | | WASTE JP-4 SLUDGE |
| BASE | 87/12/09 | D001 | | WASTE DIESEL FUEL |
| BASE | 88/03/22 | D001 | | JP-4 SEPERATORS 27573 LB |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | | |
| 122-1 | 88/08/18 | D001 | | SEALING COMP |
| 122-1 | 88/08/18 | D001 | | PAINT (VARNISH) |
| 122-1 | 88/08/18 | D001 | | ADHESIVE |
| 122-1 | 88/08/18 | D001 | | SEALANT |
| 122-1 | 88/08/18 | D001 | | SEALINGPRIMER |
| 122-1 | 88/08/18 | D001 | | ADHESIVE |
| 122-1 | 88/08/18 | D001 | | ADHESIVE |
| 122-1 | 88/08/18 | D001 | | ADHESIVE |
| 122-1 | 88/08/18 | D001 | | FILLER DENT |
| 122-1 | 88/08/18 | D001 | | ADHESIVE |
| 122-1 | 88/08/18 | D001 | | ADHESIVE |

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DISPOSAL FROM DD 1348-1 TOTAL ACTIVITY
HAZARDOUS WASTE SUMMARY <3 MAY 1989>

| STORAGE SITE BUILDING | DISPOSAL DATE | E P A WASTE CODE | DESCRIPTION OF ITEM |
|---|---|---|---|
| 122-1 | 88/08/18 | F001 | TRICHLORETHANE |
| 122-1 | 88/08/18 | F001 | DICHLOROMETHANE |
| 122-1 | 88/08/18 | F005 | ADHESIVE |
| 122-1 | 88/08/18 | M001 | PENETRANT DYE |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| 122-2 | 88/08/18 | F005 | PAINT WASTE |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| CESST | 87/04/29 | D001 | JP-4 SLUG WATER |
| CESST | 87/04/29 | D002 | ALODINE/EEOXIDINE |
| CESST | 87/04/29 | D002 | OIL SULFURIC ACID |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| DEMUE | 88/04/27 | F027 | PCB TRANSFORMER (5287 LB) |
| DEMUE | 88/04/27 | F027 | PCB TRANSFORMER (4830 LB) |
| LISTED HAZARDOUS WASTE FOR LOCATION ---> | | | |
| PB122 | | | PRIMER WHITE |
| PB122 | | | PROP GLYCOL |
| PB122 | | | CLEANING COMPOUND |
| PB122 | | | CALIBRATING FLUID ARCFT |
| PB122 | | | ADDITIVE |
| PB122 | | | DEGREASER HV DTY 55GAL |
| PB122 | | | GREASE 14OZ TUBE |
| PB122 | | | CLEAN SOLVENT 55GAL |
| PB122 | | | BATTERY 12V DRY |
| PB122 | | | VARIOUS PAINTS LATEX 1GAL |
| PB122 | | | GREASE ARCFT 14OZ |
| PB122 | | | OIL/LUB MIL 7808 |
| PB122 | | | OIL MACHINE 4OZ |
| PB122 | | | CORROSION PREVENT 16OZ |
| PB122 | | | SEALING COMPOUND |
| PB122 | | | COMPOUND 655 |
| PB122 | | | HYDROLIC FLUID TL5874 |
| PB122 | | | TURPENTINE |
| PB122 | | | ENAMEL, WHITE SPRAY |
| PB122 | | | OIL, LUB 5GAL (41LB CTN) |
| PB122 | | | PAINT, GRAY |
| PB122 | | | BATTERY, NON-RECHARGABBLE |
| PB122 | | | SULF, SOLUTION 100LBS |

REPORT DATE 05/03/89

MANAGEMENT OF WASTE ITEMS FOR (GCG31)
DISPOSAL FROM DD 1348-1 TOTAL ACTIVITY
HAZARDOUS WASTE SUMMARY <3 MAY 1989>

| STORAGE SITE BUILDING | DISPOSAL DATE | E P A WASTE CODE | DESCRIPTION OF ITEM |
|---|---|---|---|
| PB122 | | | CALIBRATOR D20-100 |
| PB122 | | | VARNISH TT/W119 |
| PB122 | DRMO | | PENETRANT U/15GL |
| PB122 | DRMO | | HYDRAWLIC FLUID 10GL |
| PB122 | 86/12/12 | | WATER/OIL |
| PB122 | 87/02/24 | | ADHESIVE 8OZ TUBE |
| PB122 | 87/03/05 | D001 | FLAMMABLE TUBE |
| PB122 | 87/03/05 | D001 | FLAMMABLE |
| PB122 | 87/03/12 | | TONER XEROX BLK 2LB |
| PB122 | 87/04/01 | | SEALING COMPOUND |
| PB122 | 87/04/29 | D001 | TOLUENE & ISOBUTOLACETATE |
| PB122 | 87/04/29 | D001 | ADHESIVE |
| PB122 | 87/04/29 | D001 | MEK ADHESIVE |
| PB122 | 87/04/29 | D001 | MEK |
| PB122 | 87/04/29 | D001 | PRIMER WEP/SYS |
| PB122 | 87/04/29 | D001 | LACQUER RED |
| PB122 | 87/04/29 | D008 | COMPOUND 2.5# |
| PB122 | 87/05/20 | D001 | STANDARD SOLVENT |
| PB122 | 87/05/20 | D001 | EPOXY COATING KIT |
| PB122 | 87/05/20 | D002 | ACEDIC ACID |
| PB122 | 87/05/20 | D009 | MERCURY BULBS |
| PB122 | 87/07/31 | D001 | EPOXY ADHESIVE |
| PB122 | 87/07/31 | D001 | EPOXY ADHESIVE |
| PB122 | 87/07/31 | D001 | RUBBER CEMENT |
| PB122 | 87/07/31 | D001 | ADHESIVE |
| PB122 | 87/07/31 | D001 | LUBE OIL |
| PB122 | 87/07/31 | D001 | ARCFT GREASE 14OZ |
| PB122 | 87/07/31 | D001 | ELECT POT COMPOUND |
| PB122 | 87/07/31 | D001 | ADHESIVE 2 PART 6OZ |
| PB122 | 87/07/31 | D001 | CARR RES 4OZ CONTAINER |
| PB122 | 87/07/31 | D001 | CONTAINS XZLENE |
| PB122 | 87/07/31 | D001 | GREASE 14 OZ |
| PB122 | 87/07/31 | D001 | RESIN BRUSHABLE |
| PB122 | 87/07/31 | D001 | ADHESIVE FLAMMABEL |
| PB122 | 87/07/31 | D001 | ERASCAN E LIQ FLAMMABLE |
| PB122 | 87/07/31 | D001 | LUB OIL 2OZ |
| PB122 | 87/07/31 | D001 | POLYURTHANE COATING |
| PB122 | 87/07/31 | D009 | BATTERY ACR/K-311 |
| PB122 | 87/07/31 | D009 | BATTERY BA=157/U |
| PB122 | 87/07/31 | D009 | BATTERY BA-1568/U |
| PB122 | 87/08/01 | | BATTERY 1.33V |
| PB122 | 87/08/28 | | HYD/FLD TL 5874 |
| PB122 | 87/09/01 | | MERCURY STORAGE BATTERY |
| PB122 | 87/09/01 | M | DENATURED ALCOHOL |
| PB122 | 87/10/07 | D001 | LUBRICANT SOLID |
| PB122 | 87/10/07 | D001 | PAINT AEROSOL |
| PB122 | 87/10/07 | D001 | LUBE AEROSOL |
| PB122 | 87/10/07 | D001 | PAINT AEROSOL |
| PB122 | 87/10/07 | D001 | COATING POLY MIL-C+ 1GAL |

REPORT DATE 05/03/89

MANAGEMENT OF WASTE ITEMS FOR (GCG31)
DISPOSAL FROM DD 1348-1 TOTAL ACTIVITY
HAZARDOUS WASTE SUMMARY <3 MAY 1989>

| STORAGE SITE BUILDING | DISPOSAL DATE | E P A WASTE CODE | DESCRIPTION OF ITEM |
|---|---|---|---|
| PB122 | 87/10/07 | D001 | COMPOUND ADHESIVE |
| PB122 | 87/10/07 | D001 | PAINT |
| PB122 | 87/10/07 | D001 | ENAMAL STRATA-BLUE |
| PB122 | 87/10/07 | D001 | PRIMER, MIL 4383 |
| PB122 | 87/10/07 | D001 | ADHESIVE 5PT |
| PB122 | 87/10/07 | D001 | ADHESIVE 175OZ |
| PB122 | 87/10/07 | D001 | CEMENT BUBBER 1/2PT |
| PB122 | 87/10/07 | D001 | OIL STAIN WALNUT |
| PB122 | 87/10/07 | D001 | GRAY PAINT MIL-E-14 |
| PB122 | 87/10/07 | D001 | SEALANT RUBBER 2 1/2OZ |
| PB122 | 87/10/07 | D001 | SEALANT RUBBER 6OZ |
| PB122 | 87/10/07 | D001 | ADHES G93401720 2 PART |
| PB122 | 87/10/07 | D001 | POLYSULFIDE SEALANT |
| PB122 | 87/10/07 | D001 | ENAMEL PAINT 5GAL |
| PB122 | 87/10/07 | D002 | CLEANING COMP 803 8OZ |
| PB122 | 87/10/07 | D002 | BATTERY ALKALINE 1.5V |
| PB122 | 87/10/07 | D003 | BATTERY LITHIUM EXPL HAZ |
| PB122 | 87/10/07 | D007 | CHROMIC ACID1 |
| PB122 | 87/10/07 | F002 | DEGREASER INHIBISOL TRIC1 |
| PB122 | 87/10/07 | U226 | TRICHLOROETHANE AEROSOL |
| PB122 | 87/10/30 | | WEAPONS OIL 5GAL |
| PB122 | 87/10/30 | | HYDRAULIC FLUID |
| PB122 | 87/10/30 | | LACQUER RED 16OZ |
| PB122 | 87/12/09 | D001 | SILICONE METHONOL |
| PB122 | 87/12/09 | D001 | PAINT FLAMMABLE |
| PB122 | 87/12/09 | D001 | POLYURETHANE 5GL |
| PB122 | 87/12/09 | D001 | FILLER DENT 1QT |
| PB122 | 87/12/09 | D009 | WASTE MERCURY |
| PB122 | 88/01/20 | D001 | ENAMEL WHITE SPRAY |
| PB122 | 88/01/20 | D001 | AEROSOL PAINT |
| PB122 | 88/02/11 | D001 | LAQUER |
| PB122 | 88/02/11 | D001 | PETROLEUM NAPTHA 5 GL |
| PB122 | 88/02/11 | D003 | BATTERY 12 VOLTS LITHIUM |
| PB122 | 88/04/20 | | OIL LUBE |
| PB122 | 88/04/20 | | DETERGENT 8-2GAL CONTAI'R |
| PB122 | 88/04/20 | | OIL LUBE 16 OZ CRC 5 |
| PB122 | 88/04/20 | | ADHESIVE 3 OZ TUBE |
| PB122 | 88/05/19 | | THINNER RBR ADHES(HEXANE) |
| PB122 | 88/05/19 | | FILLER DENT 1GL |
| PB122 | 88/05/19 | | DEVELOPERU/1120T |
| PB122 | 88/05/19 | | SEALING COMPOUND 39508 OZ |
| PB122 | 88/05/19 | | PAINT REM TT-R-251 |
| PB122 | 88/05/19 | | PREP-SOL WAX REMOVERM |
| PB122 | 88/05/19 | | SEALING COMPOUND |
| PB122 | 88/05/19 | | ADHESIVE 12 OZ (POISON) |
| PB122 | 88/05/19 | | ADHESIVE EA934NA |
| PB122 | 88/05/19 | | SEALING COMPOUND |
| PB122 | 88/05/19 | | COATING CEMENT QF180 |
| PB122 | 88/05/19 | | ENAMEL GRAY SEMI/GLOS |

| STORAGE SITE BUILDING | DISPOSAL DATE | E P A WASTE CODE | DESCRIPTION OF ITEM |
|---|---|---|---|
| PB122 | 88/05/19 | | POLYURETHANE |
| PB122 | 88/05/19 | | ADHESIVE EC711 |
| PB122 | 88/05/19 | | ADHESIVE 12 OZ |
| PB122 | 88/05/19 | | RESIN BRUSHABLE |
| PB122 | 88/05/19 | | BATTERY NONRECHARGE |
| PB122 | 88/05/19 | | ADHESIVE EC711 |
| PB122 | 88/05/19 | | POLYURETHANE COATING |
| PB122 | 88/05/19 | | PRIMER |
| PB122 | 88/05/19 | | ADHESIVE SILICONE |
| PB122 | 88/05/19 | | SEALANT 6OZ |
| PB122 | 88/05/19 | | FLD TAPG 16OZ MOLYD |
| PB122 | 88/05/19 | | ADHESIVE |
| PB122 | 88/05/19 | | NICAD BAT MR8056-1 |
| PB122 | 88/05/19 | | ADHESIVE 2OZ |
| PB122 | 88/05/19 | | ENAMEL WHITE SPRAY |
| PB122 | 88/05/19 | | OIL/LUBE MILL7808 |
| PB122 | 88/05/19 | | ADHESIVE COMPUND |
| PB122 | 88/05/19 | | SEALANT 5OZ |
| PB122 | 88/06/08 | U151 | THERMOMETER |
| PB122 | 88/06/08 | U151 | MERCURY THERMOMETER DAM'G |
| PB122 | 88/06/29 | D006 | BATTERY |
| PB122 | 88/08/18 | 029L | ACID CLEANER |
| PB122 | 88/08/18 | D001 | RBR CEMENT PHOTOGH |
| PB122 | 88/08/18 | D001 | COMPOUND SEALING |
| PB122 | 88/08/18 | D001 | ADHESIVE RTV 3OZ |
| PB122 | 88/08/18 | D001 | ADHESIVE 3 OZ |
| PB122 | 88/08/18 | D001 | COMPOUND ADHESIVE |
| PB122 | 88/08/18 | D001 | ADHESIVE .5PT |
| PB122 | 88/08/18 | D001 | SEALANT 700 &700A |
| PB122 | 88/08/18 | D001 | DEVELOPER 42 OZ. PBS |
| PB122 | 88/08/18 | D001 | LACQUER WHITE GLOSS |
| PB122 | 88/08/18 | D001 | INSULATION COMP. |
| PB122 | 88/08/18 | D001 | SEALANT 50CC |
| PB122 | 88/08/18 | D001 | CEMENT, LIQUID 5GAL |
| PB122 | 88/08/18 | D001 | SEALENT 1QT |
| PB122 | 88/08/18 | D001 | PHOTO EQUIP SUPPLIES |
| PB122 | 88/08/18 | D001 | SEALING COMPOUND |
| PB122 | 88/08/18 | D001 | ADHEASIVE 6OZ |
| PB122 | 88/08/18 | D001 | SEALANT 2 COMPONENTS |
| PB122 | 88/08/18 | D006 | BATTERY, NON-RECHARGABLE |
| PB122 | 88/08/18 | F001 | DICHCLOROMETHANE |
| PB122 | 88/08/18 | F002 | METHYLENE CHLORIDE |
| PB122 | 88/08/18 | F003 | PAINT |
| PB122 | 88/08/18 | F005 | SHELLAC CUT |
| PB122 | 88/08/18 | F005 | LACQUER |
| PB122 | 88/08/18 | F005 | PAINT |
| PB122 | 88/08/18 | F005 | ENAMEL |
| PB122 | 88/08/18 | F005 | ENAMEL/WHITE 5GAL |
| PB122 | 88/08/18 | F005 | SHELLAC, CUT |

| STORAGE SITE BUILDING | DISPOSAL DATE | E P A WASTE CODE | DESCRIPTION OF ITEM |
|---|---|---|---|
| PB122 | 88/08/18 | F005 | PAINT |
| PB122 | 88/08/18 | F005 | PAINT |
| PB122 | 88/08/18 | F005 | ENAMEL |
| PB122 | 88/08/18 | F005 | PAINT |
| PB122 | 88/08/18 | F005 | ENAMEL |
| PB122 | 88/08/18 | F005 | PAINT |
| PB122 | 88/08/18 | F005 | PAINT |
| PB122 | 88/08/18 | M001 | BATTERY PACK |
| PB122 | 88/08/18 | M001 | INSP PENETRANT |
| PB122 | 88/08/25 | D003 | METHYAL ETHYAL KETONE MEK |
| PB122 | 88/09/13 | | COATING KIT ALUMINU |
| PB122 | 88/09/13 | | CYLINDER |
| PB122 | 88/09/13 | | MEK |
| PB122 | 88/09/13 | | OIL TUBE 5OZ |
| PB122 | 88/09/13 | | SEALANT 50CC |
| PB122 | 88/09/13 | | LOCK TIGHT 50CC |
| PB122 | 88/09/13 | | SEAL LOCKTITE 50CC |
| PB122 | 88/09/13 | | ADHESIVE SILICONE RTV 8OZ |
| PB122 | 88/09/13 | | ADHESIVE 2OZ |
| PB122 | 88/09/13 | | ADHESIVE RTV-108 3OZ |
| PB122 | 88/09/13 | | PRIMER YELLOW 6OZ |
| PB122 | 88/09/13 | | LUBRICANT SOLID 16OZ |
| PB122 | 88/09/13 | | LIQUID LEAK DETN 6OZ |
| PB122 | 88/09/13 | | ADHES RTV-102 12OZ |
| PB122 | 88/09/13 | | ADHES FIBERGLASS 2PT 4OZ |
| PB122 | 88/09/13 | | CLEAN COMPOUND 5 GL |
| PB122 | 88/09/13 | | SEALING COMPOUND |
| PB122 | 88/09/13 | | COMPOUND POTTING |
| PB122 | 88/09/13 | | ADDITIVE LACQUER |
| PB122 | 88/09/13 | | GREASE 1.75LB |
| PB122 | 88/09/13 | | SEALANT 2 COMPONENT |
| PB122 | 88/09/13 | | FLUID CUTTING |
| PB122 | 88/09/13 | | COMPOUND 50 CC |
| PB122 | 88/09/13 | | ENAMEL BONE WHITE |
| PB122 | 88/09/13 | | ADHESIVE 95195 |
| PB122 | 88/09/13 | | PAINT ADDITIVE 2595 |
| PB122 | 88/09/13 | | ENAMEL HIGH GLOSS |
| PB122 | 89/02/28 | M001 | GREASE 1.75LBS |
| PB122 | 89/03/01 | D001 | CYCLOHEYLAMINE UN 2357 |
| PB122 | 89/03/01 | D001 | METHANOL TECH 55GAL |
| PB122 | 89/03/01 | D001 | PAINT ENAMEL |
| PB122 | 89/03/01 | D001 | ADHESIVE |
| PB122 | 89/03/01 | D001 | SEALING COMPOUND |
| PB122 | 89/03/01 | D001 | SEALING COMPOUND |
| PB122 | 89/03/01 | D001 | CORROSION RES PRE |
| PB122 | 89/03/01 | D009 | BATTERY 6.75V |
| PB122 | 89/03/01 | D009 | BATTERY 6.75V |
| PB122 | 89/03/02 | D001 | PAINT LACQUER |
| PB122 | DRMO | | ISOPROPYL ALCOHOL 5GL |

REPORT DATE 05/03/89

MANAGEMENT OF WASTE ITEMS FOR (GCG31)
DISPOSAL FROM DD 1348-1 TOTAL ACTIVITY
HAZARDOUS WASTE SUMMARY <3 MAY 1989>

| STORAGE SITE BUILDING | DISPOSAL DATE | E WASTE | P A CODE | DESCRIPTION OF ITEM |
|---|---|---|---|---|
| PB122 | DRMO | | | SEALANT MIL-S-8802 |
| PB122 | DRMO | | | GREASE PLUG |
| PB122 | DRMO | | | BATTERY NONRECHARGE |
| PB122 | DRMO | | | AEROSOL ENAMEL WHITE |
| PB122 | DRMO | | | TURPENTINE |
| PB122 | DRMO | | | OIL LUBRICANT 59 |
| PB122 | DRMO | | | THERMOMETER INDICAT |
| PB122 | NO FOUND | | | POLYURETHANE WHITE 2GAL |
| PB122 | RTD/SALE | | | OIL 55GAL |
| PB122 | RTD/SALE | | | CLEANING COMP 55GAL |
| PB122 | RTD/SALE | | | OIL, U/15GAL (41LB CONT) |
| PB122 | RTD/SALE | | | CYCLOHEXY 0-C-0094& 55GAL |

LISTED HAZARDOUS WASTE FOR LOCATION --->

| | | | | |
|---|---|---|---|---|
| PH#3 | 87/07/31 | D001 | | WASTE JP-4 SLUGE |

LISTED HAZARDOUS WASTE FOR LOCATION --->

NUMBER OF RECORDS SELECTED FOR THE REPORT = 479

# APPENDIX C

## RESULTS OF WATER QUALITY TESTING OF NPDES-PERMITTED OUTFALLS AND OF UPPER PEVERLY, LOWER PEVERLY, AND BASS PONDS

FLAGSTONE BROOK

| DATE SAMPLED | OILS & GREASES (mg/l) | SURFACTS (mg/l) | TCE (ppb) | BOD (mg/l) | FLOW (mgd) | PH (ph units) |
|---|---|---|---|---|---|---|
| 24 SEP 86 | 0.80 | < 0.1 | N/A | | 2.80 | N/A |
| 23 DEC 86 | < 0.3 | < 0.1 | N/A | | 2.80 | N/A |
| 27 MAR 87 | 0.39 | < 0.1 | < 0.2 | | 2.80 | 6.95 |
| 10 JUN 87 | < 0.3 | < 0.1 | < 0.2 | | 2.80 | 7.30 |
| 29 SEP 87 | < 0.3 | 0.10 | < 0.2 | | 2.80 | 7.20 |
| 16 DEC 87 | < 0.3 | < 0.1 | < 0.2 | | 2.80 | 7.30 |
| 17 MAR 88 | < 0.3 | < 0.1 | < 0.2 | | 2.80 | 7.20 |
| 22 JUN 88 | 0.40 | < 0.1 | | 2.80 | 7.25 | |
| 25 JUL 88 | | | < 0.2 | | | |
| 21 SEP 88 | < 0.3 | < 0.1 | | 2.80 | 7.10 | |
| 20 OCT 88 | | | < 0.2 | | | |
| 14 DEC 88 | 0.96 | 0.6 | | 71.00 | 2.00 | 7.20 |
| 14 FEB 89 | | 0.10 | < 0.2 | | | |
| 8 MAR 89 | < 0.3 | < 0.1 | < 0.2 | 5.00 | 0.20 | 8.20 |
| 19 APR 89 | | < 0.1 | | | | 7.10 |

GRAFTON DITCH

| DATE SAMPLED | OILS & GREASES (mg/l) | SURFACTS (mg/l) | TCE (ppb) | BOD (mg/l) | FLOW (mgd) | PH (ph units) |
|---|---|---|---|---|---|---|
| 24 SEP 86 | < 0.3 | < 0.1 | N/A | | 1.30 | N/A |
| 23 DEC 86 | 0.70 | < 0.1 | N/A | | 1.30 | N/A |
| 25 MAR 87 | 32.10 | 0.17 | 0.90 | | 1.30 | 7.10 |
| 10 JUN 87 | 2.60 | 0.10 | BIT | | 1.30 | 7.30 |
| 29 SEP 87 | 7.00 | 0.10 | 0.50 | | 1.30 | 7.40 |
| 16 DEC 87 | < 0.3 | < 0.1 | 0.60 | | 1.30 | 7.20 |
| 17 MAR 88 | 2.88 | BIT | 0.70 | | 1.30 | 7.20 |
| 27 APR 88 | | 0.60 | | | | |
| 22 JUN 88 | 6.60 | < 0.1 | | | 1.30 | 7.30 |
| 25 JUL 88 | | 0.10 | 1.00 | | | |
| 31 AUG 88 | | 0.10 | | | | |
| 21 SEP 88 | < 0.3 | < 0.1 | | | 1.30 | 7.20 |
| 26 OCT 88 | | 0.10 | < 0.2 | | | |
| 16 NOV 88 | | 0.10 | | | | |
| 14 DEC 88 | 8.80 | 0.10 | | 2.00 | 1.30 | 7.20 |
| 18 JAN 89 | | 0.10 | | | | |
| 14 FEB 89 | | 1.10 | < 0.2 | | | |
| 8 MAR 89 | < 0.3 | 0.10 | 0.70 | 6.00 | 1.30 | 7.20 |
| 19 APR 89 | | < 0.1 | | | | 7.00 |

HODGSON BROOK

| DATE SAMPLED | OILS & GREASES (mg/l) | SURFACTS (mg/l) | TCE (ppb) | BOD (mg/l) | FLOW (mgd) | PH (ph units) |
|---|---|---|---|---|---|---|
| 24 SEP 86 | < 0.3 | < 0.1 | N/A | | 1.70 | N/A |
| 23 DEC 86 | < 0.3 | < 0.1 | N/A | | 1.70 | N/A |
| 25 MAR 87 | 1.33 | 0.11 | < 0.2 | | 1.70 | 7.10 |
| 10 JUN 87 | < 0.3 | 0.10 | < 0.2 | | 1.70 | 7.30 |
| 29 SEP 87 | < 0.3 | < 0.1 | < 0.2 | | 1.70 | 7.40 |
| 16 DEC 87 | < 0.3 | < 0.1 | < 0.2 | | 1.70 | 7.30 |
| 17 MAR 88 | < 0.3 | BIT | < 0.2 | | 1.70 | 7.20 |
| 27 APR 88 | | < 0.1 | | | | |
| 22 JUN 88 | < 0.3 | < 0.1 | | | 1.70 | 7.30 |
| 25 JUL 88 | | | < 0.2 | | | |
| 21 SEP 88 | < 0.3 | < 0.1 | | | 1.70 | 7.00 |
| 20 OCT 88 | | | < 0.2 | | | |
| 14 DEC 88 | 0.48 | < 0.1 | | 13.00 | 0.50 | 7.00 |
| 14 FEB 89 | | | NS | | | |
| 8 MAR 89 | 2.90 | 0.10 | < 0.2 | 4.00 | 0.70 | |

MCINTYRE BROOK

| DATE SAMPLED | OILS & GREASES (mg/l) | SURFACTS (mg/l) | TCE (ppb) | BOD (mg/l) | FLOW (mgd) | PH (ph units) |
|---|---|---|---|---|---|---|
| 24 SEP 86 | < 0.3 | < 0.1 | N/A | | 1.00 | 7.20 |
| 23 DEC 86 | < 0.3 | BIT | N/A | | | |
| 25 MAR 87 | 0.39 | < 0.1 | 3.80 | | 1.70 | 7.15 |
| 10 JUN 87 | < 0.3 | < 0.1 | 5.80 | | 1.70 | 7.30 |
| 29 SEP 87 | < 0.3 | 0.10 | 2.50 | | 1.70 | 7.30 |
| 16 DEC 87 | 4.92 | 0.40 | 1.80 | | 1.70 | 7.00 |
| 17 MAR 88 | < 0.3 | BIT | 8.70 | | 1.70 | 7.30 |
| 27 APR 88 | | < 0.1 | | | | |
| 22 JUN 88 | 0.40 | < 0.1 | | | 1.70 | 7.30 |
| 25 JUL 88 | | < 0.1 | < 0.2 | | | |
| 31 AUG 88 | | < 0.1 | | | | |
| 21 SEP 88 | < 0.3 | < 0.1 | | | 1.70 | 7.10 |
| 26 OCT 88 | | 0.10 | 3.40 | | | |
| 16 NOV 88 | | < 0.1 | | | | |
| 14 DEC 88 | 2.24 | 0.10 | | 69.00 | 3.40 | 7.20 |
| 18 JAN 89 | | < 0.1 | | | | |
| 14 FEB 89 | | 0.30 | 0.30 | | | |
| 8 MAR 89 | < 0.3 | < 0.1 | 3.10 | 2.00 | 2.50 | 7.50 |
| 19 APR 89 | | < 0.1 | | | | 7.10 |

PEASE AFB NH

OTHER SURFACE WATER SAMPLES

Upper Peverly Pond

| DATE | SURF. (mg/l) | OIL/GRS (mg/l) |
|---|---|---|
| Jun 81 | < 0.1 | 1.66 |
| Dec 81 | < 0.1 | 0.4 |
| Jun 82 | < 0.1 | < 0.3 |
| Jan 83 | < 0.1 | < 0.3 |
| Jul 83 | < 0.1 | 0.4 |

Lower Peverly Pond

| DATE | SURF. (mg/l) | OIL/GRS (mg/l) |
|---|---|---|
| Jun 81 | < 0.1 | 0.45 |
| Dec 81 | < 0.1 | < 0.4 |
| Jun 82 | < 0.1 | 6.75 |
| Jan 83 | < 0.1 | < 0.3 |
| Jul 83 | < 0.1 | 0.4 |

Bass Pond

| DATE | SURF. (mg/l) | OIL/GRS (mg/l) |
|---|---|---|
| Jun 81 | < 0.1 | 5.325 |
| Jun 82 | < 0.1 | 5.57 |
| Jul 83 | < 0.1 | 7.7 |
| Jun 84 | < 0.1 | 1.2 |
| Dec 84 | < 0.1 | < 0.3 |
| Jun 85 | < 0.1 | < 0.5 |

Mar 85 - PESTICIDES - NONE DETECTED

# APPENDIX D

## Ldn METHODOLOGY

# APPENDIX D

# Ldn METHODOLOGY

## D.1 NOISE ENVIRONMENT DESCRIPTOR (Ldn)

The day-night average sound level (Ldn) metric for describing the noise environment was used to produce the noise contours presented in this assessment (Acoustical Society of America 1980). Efforts to provide a national uniform standard for noise assessment have resulted in adoption of Ldn by the U.S. Environmental Protection Agency (EPA) as the standard measure of noise for this procedure. It is used by numerous federal agencies, including the Department of Defense, Department of Housing and Urban Development, and the Federal Aviation Administration.

Use of the Ldn descriptor is a method of assessing the amount of exposure to aircraft noise and predicting the percentage of residents in a well-populated community that are *highly annoyed* (% HA) by the various levels of exposure (Committee on Hearing, Bioacoustics, and Mechanics 1977; Schultz 1978). The Ldn values used for planning purposes and for which contours are presented in this assessment are 65, 70, 75, 80, and 85 dB. Land use guidelines are based on the compatibility of various land uses with these exposure levels (U.S. Department of Defense 1964).

It is generally recognized that a noise environment descriptor should consider, in addition to the annoyance of a single event, the effect of repetition of such events and the time of day in which these events occur. Computation begins with a single-event energy descriptor and adds corrections for the number of events and the time of day. Since the primary noise impact relates to residential areas, nighttime events are considered more annoying than daytime events and are weighted 10 dB accordingly. The Ldn values are computed by first logarithmically summing the single-event energy values for all of the flight operations in a typical 24-hour day (after adding the 10-dB penalty to all nighttime-operation levels); then the average sound level is calculated for a 24-hour period.

As part of an extensive data-collection process, detailed information is gathered on the flight tracks flown by each type of aircraft assigned to the base and the number and time of day of flights on each of these tracks during a typical day. This information is used in conjunction with the single-event noise descriptor to produce Ldn values. These values are combined on an energy-summation basis to provide single Ldn values for the mix of aircraft operations at the base. Equal value points are connected to form the contour lines.

## D.2 SINGLE-EVENT NOISE EVENT DESCRIPTOR (SEL)

The single-event noise energy descriptor used in the Ldn system is the sound exposure level (SEL). The SEL measure is an integration of the A-weighted sound pressure level over the time interval of a single event (such as an aircraft flyover), corrected to equivalent level for a reference period of 1 second. Frequency, magnitude,

and duration vary according to aircraft type, engine type, and power setting. Therefore, individual aircraft noise data are collected for various types of aircraft/engines at different power settings and phases of flight. SEL versus slant range values are derived from noise measurements made according to a source noise data acquisition plan developed by Bolt, Beranek and Newman, Inc., in conjunction with the Armstrong Aerospace Medical Research Laboratory (AAMRL) and carried out by AAMRL (Bishop and Galloway 1975). These standard-day, sea-level values form the basis for the individual-event noise descriptors at any location and are adjusted to the location by applying appropriate corrections for temperature, humidity, altitude, and variations from standard aircraft operating profiles and power settings.

Ground-to-ground sound propagation characteristics are used for ground run-up activities. Air-to-ground propagation characteristics are used whenever the aircraft is airborne and the line-of-sight from observer to aircraft is 7 degrees or greater above horizontal; if the line-of-sight is 4 degrees or less, ground-to-ground propagation characteristics are used. Between these angles, propagation characteristics are interpolated (Speakman et al. 1977).

In addition to use for assessing aircraft flight operations, the Ldn metric can also be used to assess aircraft and engine run-up noise emissions resulting from engine/aircraft maintenance checks on the ground. Sounds such as aircraft/engine ground run-up noise are essentially constant in level during each test run at a given power setting. Data on the orientation of the noise source, type of aircraft or engine, number of test runs on a typical day, the power settings used and their duration, and use of suppression devices are collected for each ground run-up test position. This information is processed along with *mean sound pressure level* (average-energy level) data to yield equivalent 1-second sound exposure levels, which are added (on an energy-summation basis) to the SEL levels generated by flight operations to produce Ldn contours reflecting the overall noise environment produced by both air and ground operations of aircraft.

## D.3 NOISE CONTOUR PRODUCTION

Data describing flight tracks, flight profiles, power settings, flight paths and profile utilization, and ground run-up information by type of aircraft/engine are assembled and processed for input into a central computer. Ldn contours are generated by the computer using the airfield-supplied operational data and the standard source-noise data corrected to local conditions. The computer system plots these contours, which are provided in the text.

## D.4 NOISEMAP COMPUTER PROGRAM

The Ldn methodology for military flight operations is implemented by use of the computer program NOISEMAP. NOISEMAP was initially developed in 1974 by the Air Force (Horonjeff et al. 1974) and utilizes a subsidiary code (*OMEGA*) to provide a file of military flight and ground maintenance operational data by aircraft type. The current versions of this code used for this study are OMEGA 10 and OMEGA 11.

# APPENDIX E

# COMPATIBLE USE DISTRICTS

| * SLUCM CODE | LAND USE CATEGORY | COMPATIBLE USE DISTRICTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | | $L_{dn}$ 85 | APZ I $L_{dn}$ 80-85 | APZ I $L_{dn}$ 75-80 | APZ I $L_{dn}$ 70-75 | APZ I $L_{dn}$ 65-70 | $L_{dn}$ 80-85 | $L_{dn}$ 75-80 | APZ II $L_{dn}$ 80-85 | APZ II $L_{dn}$ 75-80 | APZ II $L_{dn}$ 70-75 | APZ II $L_{dn}$ 65-70 | $L_{dn}$ 70-75 | $L_{dn}$ 65-70 |
| | RESIDENTIAL | | | | | | | | | | | | | |
| 11x | Single Family | N | N | N | N | N | N | N | N | N | 30[1,2] | 25[1,2] | 30[2] | 25[2] |
| 11x | Two Family | N | N | N | N | N | N | N | N | N | N | N | 30[2] | 25[2] |
| 11 x | Multi-family dwelling | N | N | N | N | N | N | N | N | N | N | N | 30[2] | 25[2] |
| 12 | Group quarters | N | N | N | N | N | N | N | N | N | N | N | 30[2] | 25[2] |
| 13 | Residential hotels | N | N | N | N | N | N | N | N | N | N | N | 30[2] | 25[2] |
| 14 | Mobil home parks or courts | N | N | N | N | N | N | N | N | N | N | N | 30[2] | 25[2] |
| 15 | Transient lodging - hotels, motels | N | N | N | N | N | N | 35[2] | N | N | N | N | 30[2] | 25[2] |
| 19 | Other residential | N | N | N | N | N | N | N | N | N | N | N | 30[2] | 25[2] |
| | INDUSTRIAL/MANUFACTURING[3] | | | | | | | | | | | | | |
| 21 | Food and kindred product | N | N | N | N | N | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 22 | Textile mill products | N | N | N | N | N | Y[4] | Y[5] | N | N | N | N | Y[6] | Y |
| 23 | Apparel | N | N | N | N | N | Y[4] | Y[5] | N | N | N | N | Y[6] | Y |
| 24 | Lumber & wood products | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 25 | Furniture & fixtures | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 26 | Paper & allied products | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 27 | Printing, publishing | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 28 | Chemicals & allied products | N | Y[3,4] | Y[3,4] | Y[3,6] | Y[3] | Y[4] | Y[5] | Y[3,4] | Y[3,5] | Y[3,6] | Y[3] | Y[6] | Y |
| 29 | Petroleum refining and related industries | N | N | N | N | N | Y[4] | Y[5] | N | N | N | N | Y[6] | Y |

This table is a guide. Adaptations to fit local conditions and more precise land use category designations are required based on the criteria of the foregoing narrative.

Figure IV-2 Land Use Compatibility Guidelines

| SLUCM* CODE | LAND USE CATEGORY | COMPATIBLE USE DISTRICTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | | $L_{dn}$ 85 | APZ I $L_{dn}$ 80-85 | APZ I $L_{dn}$ 75-80 | APZ I $L_{dn}$ 70-75 | APZ I $L_{dn}$ 65-70 | $L_{dn}$ 80-85 | $L_{dn}$ 75-80 | APZ II $L_{dn}$ 80-85 | APZ II $L_{dn}$ 75-80 | APZ II $L_{dn}$ 70-75 | APZ II $L_{dn}$ 65-70 | $L_{dn}$ 70-75 | $L_{dn}$ 65-70 |
| | INDUSTRIAL/MANUFACTURING[3] | | | | | | | | | | | | | |
| 31 | Rubber & misc plastic | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 32 | Stone, clay & glass products | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 33 | Primary metal industries | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 34 | Fabricated metal products | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 35 | Professional, scientific & controlling instru | N | N | N | N | N | N | 30 | N | N | N | N | 25 | Y |
| 39 | Misc manufacturing | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| | TRANSPORTATION, COMMUNICATIONS & UTILITIES[7] | | | | | | | | | | | | | |
| 41 | Railroad, rapid rail transit | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 45 | Highway & street ROW | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 46 | Auto parking | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 47 | Communications (noise sensitive) | N | N | 30 | 25 | Y | N | 30 | N | 30 | 25 | Y | 25 | Y |
| 48 | Utilities | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 42/43 | Other trans, comm, & util | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |

This table is a guide. Adaptations to fit local conditions and more precise land use category designations are required based on the criteria of the foregoing narrative.

Figure IV-2 Land Use Compatibility Guidelines

| CLUCM CODE | LAND USE CATEGORY | COMPATIBLE USE DISTRICTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | | $L_{dn}$ 85 | APZ I $L_{dn}$ 80–85 | APZ I $L_{dn}$ 75–80 | APZ I $L_{dn}$ 70–75 | APZ I $L_{dn}$ 65–70 | $L_{dn}$ 80–85 | $L_{dn}$ 75–80 | APZ II $L_{dn}$ 80–85 | APZ II $L_{dn}$ 75–80 | APZ II $L_{dn}$ 70–75 | APZ II $L_{dn}$ 65–70 | $L_{dn}$ 70–75 | $L_{dn}$ 65–70 |
| | COMMERCIAL/RETAIL TRADE | | | | | | | | | | | | | |
| 51 | Wholesale trade | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 52 | Building materials-retail | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 53 | General merchandise-retail | N | N | N | N | N | N | 30 | N | 30 | 25 | Y | 25 | Y |
| 54 | Food-retail | N | N | N | N | N | N | 30 | N | 30 | 25 | Y | 25 | Y |
| 55 | Automotive, marine | N | N | 30 | 25 | Y | N | 30 | N | 30 | 25 | Y | 25 | Y |
| 56 | Apparel & accessories - retail | N | N | N | N | N | N | 30 | N | 30 | 25 | Y | 25 | Y |
| 57 | Eating & drinking places | N | N | N | N | N | N | 30 | N | N | N | N | 25 | Y |
| 58 | Furniture, home furnishing retail | N | N | 30 | 25 | Y | N | 30 | N | 30 | 25 | Y | 25 | Y |
| 59 | Other retail trade | N | N | N | N | N | N | 30 | N | 30 | 25 | Y | 25 | Y |
| | PERSONAL & BUSINESS[8] SERVICES | | | | | | | | | | | | | |
| 61 | Finance, insurance & real estate[8] | N | N | N | N | N | N | 30 | N | 30 | 25 | Y | 25 | Y |
| 62 | Personal services | N | N | N | N | N | N | 30 | N | 30 | 25 | Y1 | 25 | Y |
| 63 | Business services | N | N[4] | N[5] | N[6] | N | N[4] | 30 | N[4] | 30 | 25 | Y | 25 | Y |
| 64 | Repair services | N | Y[4] | Y[5] | Y[6] | Y | Y[4] | Y[5] | Y[4] | Y[5] | Y[6] | Y | Y[6] | Y |
| 66 | Contract construction services | N | N | N | N | N | N | 30 | N | 30 | 25 | Y | 25 | Y |

This table is a guide. Adaptations to fit local conditions and more precise land use category designations are required based on the criteria of the foregoing narrative.

Figure IV-2 Land Use Compatibility Guidelines

| * SLUCM CODE | LAND USE CATEGORY | COMPATIBLE USE DISTRICTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | | $L_{dn}$ 85 | APZ I $L_{dn}$ 80-85 | APZ I $L_{dn}$ 75-80 | APZ I $L_{dn}$ 70-75 | APZ I $L_{dn}$ 65-70 | $L_{dn}$ 80-85 | $L_{dn}$ 75-80 | APZ II $L_{dn}$ 80-85 | APZ II $L_{dn}$ 75-80 | APZ II $L_{dn}$ 70-75 | APZ II $L_{dn}$ 65-70 | $L_{dn}$ 70-75 | $L_{dn}$ 65-70 |
| | OUTDOOR RECREATION (Cont) | | | | | | | | | | | | | |
| 712 | Nature exhibits | N | N | N | N | Y | N | N | N | N | N | Y | N | Y |
| 722 | Spectator sports incl arenas | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 741x | Golf Course[12], riding stables[13] | N | N | Y[14] | Y[15] | Y | N | Y[14] | N | Y[14] | Y[15] | Y | Y[15] | Y |
| 743/ 744 | Water based recreational areas | N | N | Y | Y[15] | Y | N | Y[14] | N | Y[14] | Y[15] | Y | Y[15] | Y |
| 75 | Resort & group camps | N | N | N | N | N | N | N | N | N | N | N | Y | Y |
| 721x | Auditoriums, concert halls | N | N | N | N | N | N | N | N | N | N | N | N | Y |
| 721x | Outdoor amphitheaters, music shells | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | Other outdoor recreation | N | N | N | Y[11] | Y[11] | N | N | N | N | Y | Y | Y | Y |
| | RESOURCE PRODUCTION, EXTRACTION, & OPEN SPACE | | | | | | | | | | | | | |
| 81 | Agriculture (except live-stock) | Y[17] | Y[17] | Y[17] | Y[18] | Y[19] | Y[17] | Y[17] | Y[17] | Y[17] | Y[18] | Y[19] | Y[18] | Y[19] |
| 815/ 817 | Livestock Farming, animal breeding | N | N | Y[17] | Y[18] | Y[19] | N | Y[17] | N | Y[17] | Y[18] | Y[19] | Y[18] | Y[19] |
| 83 | Forestry activities | Y[17] | Y[17] | Y[17] | Y[18] | Y[19] | Y[17] | Y[17] | Y[17] | Y[17] | Y[18] | Y[19] | Y[18] | Y[19] |

This table is a guide. Adaptations to fit local conditions and more precise land use category designations are required based on the criteria of the foregoing narrative.

Figure IV-2 Land Use Compatibility Guidelines

| * SLUCM CODE | LAND USE CATEGORY | COMPATIBLE USE DISTRICTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | | $L_{dn}$ 85 | APZ I $L_{dn}$ 80-85 | APZ I $L_{dn}$ 75-80 | APZ I $L_{dn}$ 70-75 | APZ I $L_{dn}$ 65-70 | $L_{dn}$ 80-85 | $L_{dn}$ 75-80 | APZ II $L_{dn}$ 80-85 | APZ II $L_{dn}$ 75-80 | APZ II $L_{dn}$ 70-75 | APZ II $L_{dn}$ 65-70 | $L_{dn}$ 70-75 | $L_{dn}$ 65-70 |
| | PERSONAL & BUSINESS[8] SERVICES (Cont) | | | | | | | | | | | | | |
| | Indoor recreation services | N | N | N | N | N | N | 30 | N | 30 | 25 | Y | 25 | Y |
| 69 | Other services | N | N | N | N | N | N | 30 | N | 30 | 25 | Y | 25 | Y |
| | PUBLIC & QUASI PUBLIC SERVICES | | | | | | | | | | | | | |
| 67 | Government services | N | N | N | N | N | N | 30 | N | 30[8] | 25[8] | Y[8] | 25 | Y |
| 68 | Educational services | N | N | N | N | N | N | N | N | N | N | N | 30 | 25 |
| 711 | Cultural activities incl churches | N | N | N | N | N | N | N | N | N | N | N | 30 | 25 |
| 651 | Medical & other health services[9] | N | N | N | N | N | N | N | N | N | N | N | 30 | 25 |
| 624 | Cemeteries | Y | Y[4,10] | Y[5,10] | Y[6,10] | Y[10] | Y[4] | Y[5] | Y[4,10] | Y[6,10] | Y[6,10] | Y[10] | Y[6] | Y |
| 69x | Non profit organization | N | N | N | N | N | N | N | N | N | N | N | 30 | 25 |
| | Other public and quasi-public services | N | N | N | N | N | N | N | N | N | 30 | 25 | 30 | 25 |
| | OUTDOOR RECREATION | | | | | | | | | | | | | |
| 761x | Playgrounds, neighborhood parks | N | N | N | N | N | N | N | N | N | Y | Y | Y | Y |
| 762x | Community & regional | N | N | N | Y[11] | Y[11] | N | N | N | N | Y | Y[11] | Y[11] | Y |

This table is a guide. Adaptations to fit local conditions and more precise land use category designations are required based on the criteria of the foregoing narrative.

Figure IV-2 Land Use Compatibility Guidelines

| SLUCM* CODE | LAND USE CATEGORY | COMPATIBLE USE DISTRICTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | | $L_{dn}$ 85 | APZ I $L_{dn}$ 80-85 | APZ I $L_{dn}$ 75-80 | APZ I $L_{dn}$ 70-75 | APZ I $L_{dn}$ 65-70 | $L_{dn}$ 80-85 | $L_{dn}$ 75-80 | APZ II $L_{dn}$ 80-85 | APZ II $L_{dn}$ 75-80 | APZ II $L_{dn}$ 70-75 | APZ II $L_{dn}$ 65-70 | $L_{dn}$ 70-75 | $L_{dn}$ 65-70 |
| | **RESOURCE PRODUCTION, EXTRACTION, & OPEN SPACE (Cont)** | | | | | | | | | | | | | |
| 84 | Fishing activities & related services | Y | Y[11] | Y[11] | Y[11] | Y[11] | Y | Y | Y | Y | Y | Y | Y | Y |
| 85 | Mining activities | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 91 | Permanent open space | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 93 | Water areas | Y | Y[11] | Y[11] | Y[11] | Y[11] | Y | Y | Y | Y[11] | Y[11] | Y[11] | Y | Y |

This table is a guide. Adaptations to fit local conditions and more precise land use category designations are required based on the criteria of the foregoing narrative.

Figure IV-2 Land Use Compatibility Guidelines

NOTES

| | |
|---|---|
| N (NO) | The land use and related structures are not compatible and should be prohibited. |
| Y (YES) | The land use and related structures are compatible without restriction and should be considered. |
| $Y^X$ (YES WITH RESTRICTIONS) | The land use and related structures are generally compatible; however, some special factors should be considered. |
| 35, 30 or 25 | The land use is generally compatible; however, a Noise Level Reduction of 35, 30 or 25 must be incorporated into the design and construction of the structure. |
| $35^X$, $30^X$ or $25^X$ | The land use is generally compatible with NLR; however, such NLR does not necessarily solve noise difficulties and additional evaluation is warranted. |
| 1 | Because of accident hazard potential, the residential density in these CUD's should be limited to the maximum extent possible. It is recommended that residential density not exceed one dwelling unit per acre. Such use should be permitted only following a demonstration of need to utilize this area for residential purposes. |
| 2 | Although it is recognized that local conditions may require residential uses in these CUD's, this is strongly discouraged in CUD's 10 and 12 and discouraged in CUD's 11 and 13. The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these CUD's should be conducted prior to approvals.<br><br>Where the community determines that residential uses must be allowed Noise Level Reductions (NLR) of at least 30 (CUD's 10 and 12) and 25 (CUD's 11 and 13) should be incorporated into building codes and/or individual approvals. Additional consideration should be given to modify the NLR levels based on peak noise levels. Such criteria will not eliminate outdoor environment noise problems and, as a result, site planning and design should include measures to minimize this impact particularly where the noise is from ground level sources. |

3 Because these uses vary considerably by locality and within a general category, particular care should be taken to evaluate and modify guidelines to fit local conditions. Among factors to be considered: labor intensity, structural coverage explosive inflammable characteristics, size of establishment, people density, peak period (including shopper/visitors) concentrations.

4 A NLR of 35 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where the normal noise level is low.

5 A NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where the normal noise level is low.

6 A NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where the normal noise level is low.

7 No structures in Clear Zone, no passenger terminals, and no major ground transmission lines in Cear Zones or APZ I.

8 Low intensity office uses only (limited scale of concentration of such uses), meeting places, auditoriums, etc. not recommended.

9 Excludes hospitals.

10 Excludes chapels.

11 Facilities must be low intensity.

12 Clubhouse not recommended.

| | |
|---|---|
| 13 | Concentrated rings with large classes not recommended. |
| 14 | A NLR of 30 must be incorporated into buildings for this use. |
| 15 | A NLR of 25 must be incorporated into buildings for this use. |
| 16 | No structures in Clear Zone. |
| 17 | Residential structures not permitted. |
| 18 | Residential buildings require a NLR of 30. |
| 19 | Residential buildings require a NLR of 25. |

# APPENDIX F

# HEIGHT AND OBSTRUCTION CRITERIA

# APPENDIX F

## PEASE AFB

## HEIGHT AND OBSTRUCTIONS CRITERIA

### GENERAL

This appendix section establishes criteria for determining whether an object or structure is an obstruction to air navigation. Obstructions to air navigation are considered to be:

1. Natural objects or manmade structures that protrude above the planes or surfaces as defined in the following paragraphs, and/or

2. Manmade objects that extend more than 500 feet above the ground at the site of the structure.

### EXPLANATION OF TERMS

The following will apply:

1. Controlling Elevation. Where surfaces or planes within these criteria overlap, the governing elevation is that of the lowest surface or plane.

2. Runway Length. Pease AFB has 11,320' of runway pavement designed and built for sustained aircraft landings and takeoffs.

3. Established Airfield Elevation. The elevation, in feet above mean sea level, for Pease AFB is 101 feet.

4. Dimensions. All dimensions are measured horizontally unless otherwise noted.

### PLANES AND SURFACES

Definitions are as follows:

1. Primary Surface. This surface defines the limits of the obstruction clearance requirements in the immediate vicinity of the landing area. The primary surface comprises surfaces of the runways, runway shoulders, and lateral safety zones. The length of the primary surface is the same as the runway length of 11,320 feet. The width of the primary surface is 2,000 feet or 1,000 feet on each side of the runway centerline.

2. Clear Zone Surface. This surface defines the limits of the obstruction clearance requirements in the vicinity contiguous to the end of the primary surface. The length and width of the clear zone surface is 3,000 feet.

3. Approach-Departure Clearance Surface. This surface is symmetrical about the runway centerline extended, begins as an inclined plane (glide angle) 200 feet beyond each end of the primary surface at the centerline elevation of the runway end, and extends for 50,000 feet. The slope of the approach-departure clearance surface is 50:1 along the runway centerline extended (glide angle) until it reaches an elevation of 500 feet above the established airfield elevation. It then continues horizontally at this elevation to a point 50,000 feet from the start of the glide angle. The width of this surface at the runway end is 2000 feet; it flares uniformly, and the width at 50,000 is 16,000 feet.

4. Inner Horizontal Surface. This surface is a plane, oval in shape at a height of 150 feet above the established airfield elevation. It is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of the runway and interconnecting these arcs with tangents.

5. Conical Surface. This is an inclined surface extending outward and upward from the outer periphery of the inner horizontal surface for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation. The slope of the conical surface is 20:1.

6. Outer Horizontal Surface. This surface is a plane located 500 feet above the established airfield elevation. It extends for a horizontal distance of 30,000 feet from the outer periphery of the conical surface.

7. Transitional Surfaces. These surfaces connect the primary surfaces, clear zone surfaces, and approach-departure clearance surfaces to the inner horizontal surface, conical surface, outer horizontal surface or other transitional surfaces. The slope of the transitional surface is 7:1 outward and upward at right angles to the runway centerline. To determine the elevation for the beginning of the transitional surface slope at any point along the lateral boundary of the primary surface, including the clear zone, draw a line from this point to the runway centerline. This line will be at right angles to the runway axis. The elevation at the runway centerline is the elevation for the beginning of the 7 to 1 slope.

# LEGEND

| | |
|---|---|
| A | Primary Surface |
| B | Clear Zone Surface |
| C | Approach/Departure Clearance Surface (Glide Angle) |
| D | Approach/Departure Clearance Surface (Horizontal) |
| E | Inner Horizontal Surface |
| F | Conical Surface |
| G | Outer Horizontal Surface |
| H | Transitional Surface |

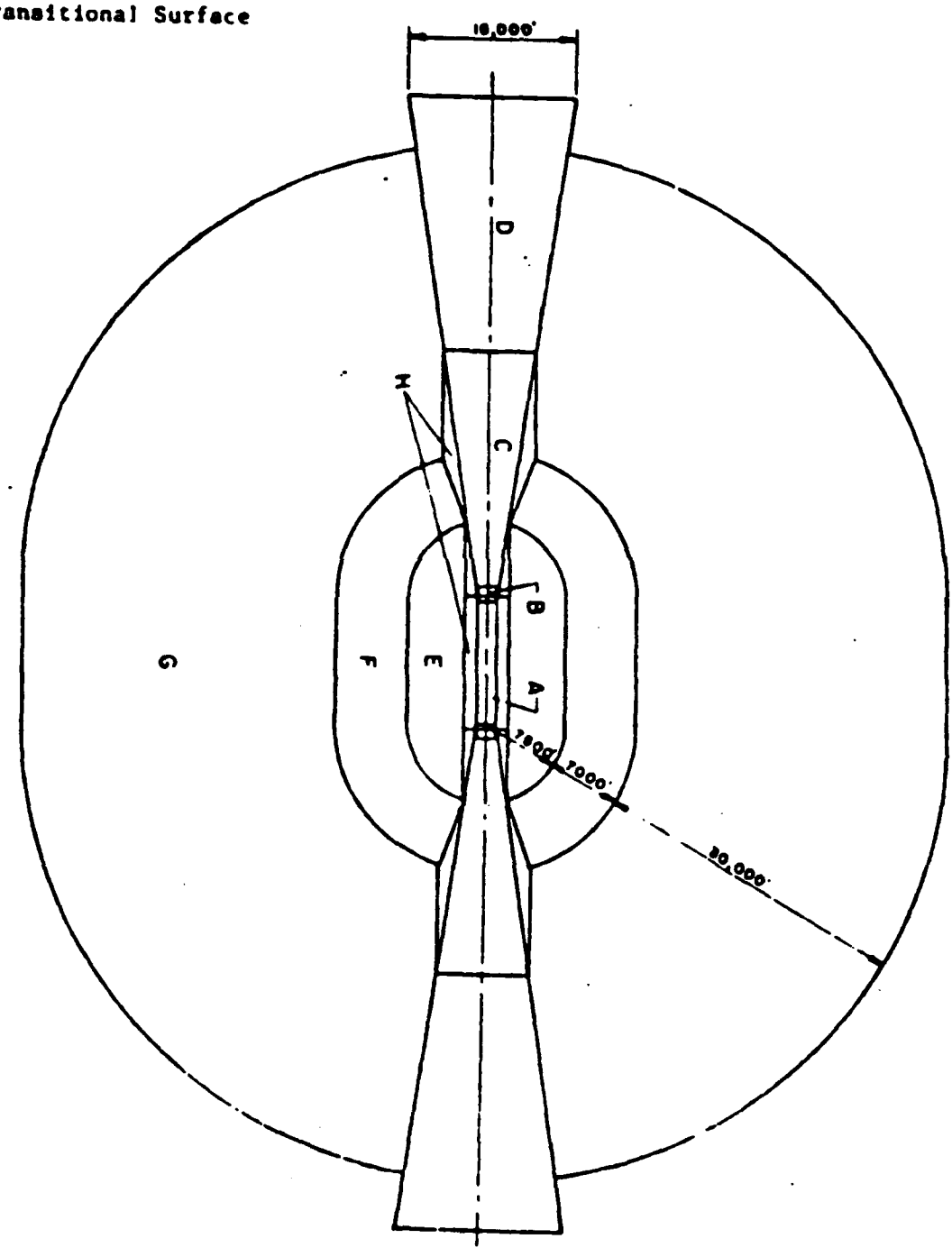



FIG. F-1

# APPENDIX G

# AIR FORCE POLICY AND MANAGEMENT OF ASBESTOS AT CLOSING BASES

# AIR FORCE POLICY ON
# MANAGEMENT OF ASBESTOS AT CLOSING BASES

## INTRODUCTION

Asbestos in building facilities is managed because of potential adverse human health effects. Asbestos must be removed or controlled if it is in a location and condition that constitutes a health hazard or a potential health hazard, or it is otherwise required by law (e.g., schools). The hazard determination must be made by a health professional (in the case of the Air Force, a Bioenvironmental Engineer) trained to make such determinations. While removal is a remedy, in many cases management alternatives (such as encapsulation within the building) are acceptable and cost-effective methods of dealing with asbestos. The keys to dealing with asbestos are knowing its location and condition and having a management plan to prevent asbestos containing materials that continue to serve their intended purpose from becoming a health hazard. There is no alternative to management of such serviceable asbestos-containing materials, because society does not have the resources to remove and dispose of all asbestos in all buildings in the United States. Most asbestos is not now nor will it become a health hazard if it is properly managed.

There are no laws applicable to the five U.S. Air Force closure bases that specifically mandate the removal or management of asbestos in buildings, other than the law addressing asbestos in schools (P.L. 99-519). Statutory or regulatory requirements that result in removal or remediation of asbestos are based on human exposure or the potential for human exposure (e.g., National Emission Standards for Hazardous Air Pollutants (NESHAPS) specify no visible emissions; the Occupational Safety and Health Administration limits (OSHA) = [..number..] of airborne fibers per volume of air, etc.). There are no statutory or other mandatory standards, criteria, or procedures for deciding what to do with asbestos. Thus, health professional judgment based on exposure levels or potential exposure levels must be the primary determinant of what should be done with asbestos. Apart from this professional and scientific approach, closing bases present the additional problem of obtaining an economic return to the Government for its property. Asbestos found on base properties that are closing must also be analyzed to determine the most prudent course in terms of removal or remediation cost and the price that can be obtained as a result.

The following specific policies will apply to bases closed or realigned (so that there are excess facilities to be sold) under the Base Closure and Realignment Act, P.L. 100-526.

1. Asbestos will be removed if:

   (a) The protection of human health as determined by the Bioenvironmental Engineer requires removal (e.g., exposed friable asbestos within a building) in accordance with applicable health laws, regulations and standards.

   (b) A building is unsalable without removal, or removal prior to sale is cost-effective; that is, the removal cost is low enough compared to value that would be received for a "clean" building that removal is a good investment for the Government. Prior to the decision to remove asbestos solely for economic reasons, an economic analysis will be conducted to determine if

demolition, removal of some types of asbestos but not others, or asbestos removal and sale would be in the best interests of the Government.

(c) A building is, or is intended to be, used as a school, child care facility, or hospital.

2. When asbestos is present but none of the above applies, the asbestos will be managed using commonly accepted standards, criteria and procedures to assure sufficient protection of human health and the environment, in accordance with applicable and developing health standards.

3. A thorough survey for asbestos (including review of facility records, visual inspection, and, where appropriate as determined by the Bioenvironmental Engineer and the Base Civil Engineer, intrusive inspection) will be conducted by the Air Force prior to sale.

4. Appraisal instructions, advertisements for sale, and deeds will contain accurate descriptions of the types, quantities, locations, and condition of asbestos in any real property to be sold or otherwise transferred outside the Federal Government. Appraisals will indicate what discount the market would apply if the building were to be sold with the asbestos in place.

5. Encapsulated asbestos in a building structure, friable or not, is not regarded as hazardous waste by the Air Force, nor does encapsulation within the structure of a building constitute "storing" or "disposing of" hazardous waste. Asbestos incorporated into a building as part of the structure has not been "stored" or "disposed of."

6. Friable asbestos, or asbestos that will probably become friable, that has been stored or disposed of underground or elsewhere on the property to be sold will be properly disposed of, unless the location is a landfill or other disposal facility properly permitted for friable asbestos disposal.

7. The final Air Force determination regarding the disposition of asbestos will be dependent on the plan for disposal and any reuse of the building. Decisions will take into account the proposed community reuse plan and the economic analysis of alternatives (see para 4). The course of action to be followed with respect to asbestos at each closing installation will be analyzed in the Disposal and Reuse Environmental Impact Statement, and will be included in the record of decision (ROD). Any buildings or facilities where the proposed asbestos plan is controversial will be addressed in the ROD, either individually or as a class of closely related facilities.

8. Since other considerations must be taken into account at bases that are continuing to operate, this policy does not apply to them, nor is it necessarily a precedent for asbestos removal policy at such bases.

# APPENDIX H

# LOCATION AND DESCRIPTION OF IRP SITES

# AND LIST OF IRP REFERENCE DOCUMENTS

## SITE DESCRIPTIONS

### Landfill 1, LF-1(site 1)

Landfill 1, the original base landfill, was operated from 1953 to 1963 and is estimated to be approximately seven acres in size. The landfill originally received construction rubble and debris during base construction. Types of materials received during subsequent base operation included domestic solid waste and shop wastes with some sporadic disposal of waste oils and solvents, paint strippers, outdated paints, paint thinners, pesticide containers, and various empty cans and drums.

### Landfill 2, LF-2 (site 2)

Landfill 2 was a minor landfill operated from 1960 to 1962. This site is approximately three acres in size. Typical use of the landfill involved cutting of long trenches to a depth of six to eight feet (or to bedrock) and covering disposed material with fill. Materials received at Landfill 2 were similar to those reported for Landfill 1.

### Landfill 3, LF-3 (site 3)

Initial investigation report indicated Landfill 3 to be a small landfill of approximately two acres. The site, located southeast of Landfill 2 and northwest of the bulk fuel storage area was operated from 1962 to 1963 following the closing of Landfill 2. Mode of operation and materials received were essentially the same as for Landfill 2. Subsequent field work, i.e., excavation test pits, indicated no evidence of source area.

### Landfill 4, LF-4 (site 4)

Initial investigation report indicated Landfill 4 was operated subsequent to Landfill 3, from 1963 to 1964. However, the results of aerial photograph review show the landfill was in use prior to 1960 and at least to 1976. The site is approximately seven acres in size. Mode of operation and materials received were essentially the same as for Landfills 2 and 3.

### Landfill No 5, LF-5 (site 5)

Landfill 5 was the major base landfill used from 1964 to 1972 and 1974 to 1975. It is approximately 23 acres in size. Its mode of operation was cut and fill. Materials received during the earlier years were similar to Landfills 1 through 4. In addition, the landfill received an estimated 20,000-gallons of sludge from the industrial waste treatment plant (Building 226). An Interim Remedial Measure (IRM) was initiated in the fall of 1989 to excavate, remove, and dispose of buried drums at this site. Excavation and drum removal work was completed in Dec 1989.

Footnote 1: Information sourced from CH2M Hill Installation Restoration Program Records Search Report dtd January 1984 and Roy F. Weston, Inc. Stage 2 Draft Final Report dated December 1989.

Landfill 6, LF-6 (site 6)

While in use LF-6 was operated as the main repository for all base solid waste including construction rubble and domestic refuse. Some spent thinners and solvents also have been disposed at this location. Refuse was buried using trench and fill methods. The landfill was reported to have been in operation between 1972 and 1974. However, a review of historical aerial photographs showed that the landfill area was cleared in 1952 and was an active landfill in 1960.

Fire Department Training Area 1, FDTA-1 (site 7)

This was the original fire department training area and was operated from 1955 to 1961. Its present state includes a circular gravel area marked by a large patch of charred sand and gravel, surrounded by a large cleared area with sparse vegetation with no indication of oil residues. No evidence of recent use was found. Waste oils, waste fuels, and spent solvents were burned at this site, with waste fuels accounting for the bulk of the material burned. The volume of material burned over the 6-year life of the training area is estimated to be between 120,000 and 200,000 gallons.

Fire Department Training Area 2, FDTA-2 (site 8)

Use of this fire department training area followed the discontinued use of the original training area. Operation began in 1961 and continued through late 1988. Prior to 1975, the site was similar to Fire Department Training Area No 1, with no improvements except clearing of vegetation and installation of a gravel bed burn pit area. In 1975, the site was refurbished by construction of a clay-lined burn area and installation of a drainage system. However, subsequent subsurface investigations have not confirmed evidence of a clay liner. From 1961 to 1971, burning exercises conducted at this fire training area were the main method of disposal for various Petroleum, Oil, and Lubricant (POL) wastes generated on base. Products burned included recovered fuels, waste oils, and spent solvents. Since about 1971, only recovered JP-4 has been used for fire training exercises at this site. An Interim Remedial Measure (IRM) was initiated in the fall of 1989 to remove contaminated soil from a drainage ditch and install, operate, and maintain a pilot groundwater treatment system

Construction Rubble Dump 1, CRD-1 (site 9)

Construction Rubble Dump 1 was operated from the late 1950s until 1989. This site was used primarily for disposal of inert construction rubble such as concrete, bituminous pavement, tree stumps, brush, and similar materials. One interviewee stated that waste solvents containing TCE were disposed of at this site during 1958 and 1959, The waste solvent was reportedly disposed of in 5-gallon cans at a rate of approximately 20-gallons per month.

Leaded Fuel Tank Sludge Disposal Site, LFTS (site 10)

The leaded fuel disposal site was used from the late 50s to 1978 for disposal of sludges cleaned from the Aviation Gasoline (AVGAS) tanks located in the bulk fuels storage area. Except for a small area of reduced vegetative cover (approximately 50 square feet), no evidence of the site's former use was found. The leaded AVGAS tanks were routinely inspected every three years and cleaned as necessary until the use of AVGAS was discontinued in 1978. Sludge cleaned from tanks consisted of rust, water, residual fuel and fuel sludge, and material from sandblasting tank interiors.

Field Maintenance Squadron (FMS) Equipment Cleaning Site, FMS (site 11)

This site was used intermittently prior to 1971 for disposal of waste solvent used to clean new equipment of their protective cosmolene coating. Except for a 100-square foot area with sparse vegetative cover, there is no evidence of the site's former use.

Munitions Storage Site Solvent Disposal Site, MSA (site 12)

This site was used as a dumping point for small quantities of waste thinners and solvents used in servicing and maintaining munitions at Building 466. The site was used for an undetermined number of years prior to 1980. Waste solvents were dumped at an estimated rate of 6 gallons/year onto the ground surface, resulting in the elimination of vegetative growth in a 10-foot square area.

Bulk Fuel Storage Area, BFSA (site 13)

The Bulk Fuel Storage Area is the main fuel storage area at the base. Minor spills have probably occurred throughout the life of the facility with only a few major spills having been reported. In 1963, a ruptured drain line resulted in the loss of thousands of gallons of fuel from bulk storage Tank 3 into the diked area surrounding the tank. Most of the spilled fuel was recovered. This same tank subsequently developed a small pinhole leak in 1980. Some minor fuel loss occurred (estimated at less than 1,000 gallons) before the leak was found and repaired. Also at the bulk storage area, a corroded vent on the fuel transfer line at Building 160 resulted in an estimated loss of several thousand gallons of fuel in 1975.

Fuel Line Spill Site, FLS (site 14)

In 1959 snow removal equipment ruptured a protruding vent line from the main underground fuel line, near the northern perimeter of the aircraft parking apron. This fuel loss was estimated to be at least 10,000 gallons. Most of the fuel either evaporated or was flushed with water into the storm drainage system.

Industrial Shop/Parking Apron, IS/PA (site 15)

This area contains the flightline shops, hangars, and aircraft parking apron refueling areas. As a result of initial investigation work, this site was subdivided into six specific areas for further investigations. These areas were designated sites 31, 32, 33, 34, 35, and 36. Description of these sites is provided further on in this appendix.

PCB Spill Site (site 16)

In 1983, a blown transformer at Building 410 resulted in the release of approximately 35-gallons of transformer oil containing 500,000 ppm PCB. Most of the spill was contained indoors on the concrete floor, although some oil did reach the ground outside of the building. The contaminated soil, as well as the transformer oil cleanup material were collected in 18 55-gallon drums. The remaining soil was analyzed and found not to contain residual PCBs.

Construction Rubble Dump 2, CRD-2 (site 17)

Construction Rubble Dump 2 received construction debris consisting of asphalt, concrete, and gravel borrow. During the Stage 2 presurvey site visit, drums were visible in the debris. No reports of hazardous waste disposal at CRD-2 have been identified. A review of aerial photographs shows that the area has been cleared since at least 1952, and CRD-2 probably received debris fron construction of the runway.

Munitions Residue Burial Site (site 18)

This site has received the inert residue from deactivated small arms ammunition, egress items, smoke grenades, and starter cartridges. Initial investigations found no evidence of hazardous waste disposal or contamination.

Newfields Ditch (site 19)

Newfields Ditch is an intermittent storm water drainage channel. It drains the IS/PA (site 15) and eventually runs into the Piscataqua River. Newfields Ditch is not known to support a sport fishery and is not authorized for recreational use.

Grafton Ditch (site 20)

Grafton Ditch, also referred to as Harveys Creek, receives storm drainage from the IS/PA (site 15) and surface runoff from LF-6 (site 6) and CRD-2 (site 17). Although it exhibits perennial flow, no sport fishing has been documented. Grafton Ditch flows into Harveys Creek which then flows northward to North Mill Pond and eventually to the Piscataqua River.

McIntyre Brook (site 21)

McIntyre Brook originates within the IS/PA (site 15) and receives storm water runoff from the runway, flightline, shop, and parking apron. Water flowing into McIntyre Brook passes through an oil/water separator before flowing off base and into Great Bay. During dry periods flow is intermittent. Although no biological data are available, the New Hampshire Fish Division speculates that McIntyre Brook may serve as a spawning ground for rainbow smelt (Rogers, 1989).

Suspected Fire Training Area (Burn Area 1), BA-1 (site 22)

Initially, site 22 was designed as "Suspected Fire Training Area", in later document the designation was changed to "Burn Area 1." Burn Area 1 was identified in aerial photographs as an area of stressed vegetation and stained soil. Historical aerial photograph review places the period of use between 1960 and 1976.

Pauls Brook (site 23)

Pauls Brook collects runoff from BFSA (site 13, and possibly some runoff from LF-3 (site 3). This brook eventually flows to the Piscataqua River, after crossing under the Spaulding Turnpike north of the main entrance to the base. It exhibits perennial flow and is not known to support a sport fishery.

Peverly Ponds/Brook (site 24)

Peverly Brook receives surface runoff and potential groundwater discharge from CRD-1 (site 8) and then flows to Upper Peverly Pond. Upper Peverly Pond receives additional runoff and potential groundwater discharge from LF-1 (site 1) and FDTA-1 (site 7). The water in upper Peverly Pond drains into Lower Peverly Pond and from there to Bass Pond before entering Great Bay. Both Upper and Lower Peverly Ponds are designated by the State of New Hampshire as sport fisheries. Pease AFB annually stocks these ponds with rainbow, brook, and brown trout. Bass Pond, although not a state-designated fishery, does support recreational fishing activity. In addition to providing a recreational warm water fishery, Lower Peverly Pond is also authorized for swimming.

Flagstone Brook (site 26)

Flagstone Brook receives surface water from the north ramp portion of the parking apron, from FDTA No 2 (site 8) via Pickering Brook and runoff from Landfills 2, 3, 4, 5 and the BFSA (site 13) before entering Little Bay. Flow in Flagstone Brook is intermittent in its upper reaches and does not support a sport fishery.

Building 244 (site 31)

An Underground Storage Tank (UST) beside Building 244 was used from 1955 to 1965 to store waste Trichloroethene (TCE) generated from degreasing aircraft parts. This tank has been suspected as a contamination source.

Building 113 (site 32)

Building 113 is the Munitions Maintenance Squadron (MMS) building. An underground storage tank adjacent to the building had been used from 1955 to 1965 to store waste TCE generated from degreasing aircraft parts. The tank was removed in 1988.

Building 229 (site 33)

Building 229 was investigated because of possible fuel/oil spills and reported past TCE use. Waste fuel and oil were pumped from this building by a large pump located behind the building.

Building 222 (site 34)

Building 222 is the Jet Engine Test Cell (JETC). Drainage from the building went to a swale located southeast of the building until the fall of 1989, when it was piped to holding tanks. Potential contaminants are JP-4 fuel, exhaust residues, and to a lesser extent, TCE.

Building 226, (site 35)

The former Industrial Waste Treatment Plant (IWTP) operated for at least 10 years (until the 1960s) in Building 226. The exact nature of wastes and treatment processes are not known. An oil/water separator is located west of the building.

Building 119 (site 36)

Building 119 is the Jet Engine Maintenance building. The drum storage and oil rack are of concern at this site because soil is visibly stained on the slope behind the drum storage area and around the oil rack. Wastes generated from this building, including fuel and waste TCE, were disposed at the fire department training areas in the past. They are currently contained in drums, stored behind building 119, and removed by a contractor.

Burn Area 2, BA-2 (site 37)

This area was discovered during the early part of investigative work conducted between Sep 87 and Dec 89. BA-2 was identified in review of 1960 aerial photographs, which showed stained soil and about 3.4 acres of cleared land. Initial investigations of this area were conducted in conjunction with work done at LFTS, site 10. In December of 1989 it was recommended to treat BA-2 as a seperate site.

## SITE LOCATOR INDEX

| SITE NUMBER | PLATE NUMBER |
|---|---|
| Site 1 | 3 |
| Site 2 | 1 |
| Site 3 | 1 |
| Site 4 | 1 |
| Site 5 | 1 |
| Site 6 | 6 |
| Site 7 | 2 |
| Site 8 | 2 |
| Site 9 | 2 |
| Site 10 | 2 |
| Site 11 | 2 |
| Site 12 | 3 |
| Site 13 | 1 |
| Site 14 | 2 |
| Site 15 | 4 |
| Site 16 | 5 |
| Site 17 | 6 |
| Site 18 | 3 |
| Site 19 | 4 |
| Site 20 | 6 |
| Site 21 | 5 |
| Site 22 | 3 |
| Site 23 | 1 |
| Site 24 | 2 |
| Site 26 | 1 |
| Site 31 | 4 |
| Site 32 | 4 |
| Site 33 | 4 |
| Site 34 | 4 |
| Site 35 | 4 |
| Site 36 | 4 |
| Site 37 | 5 |

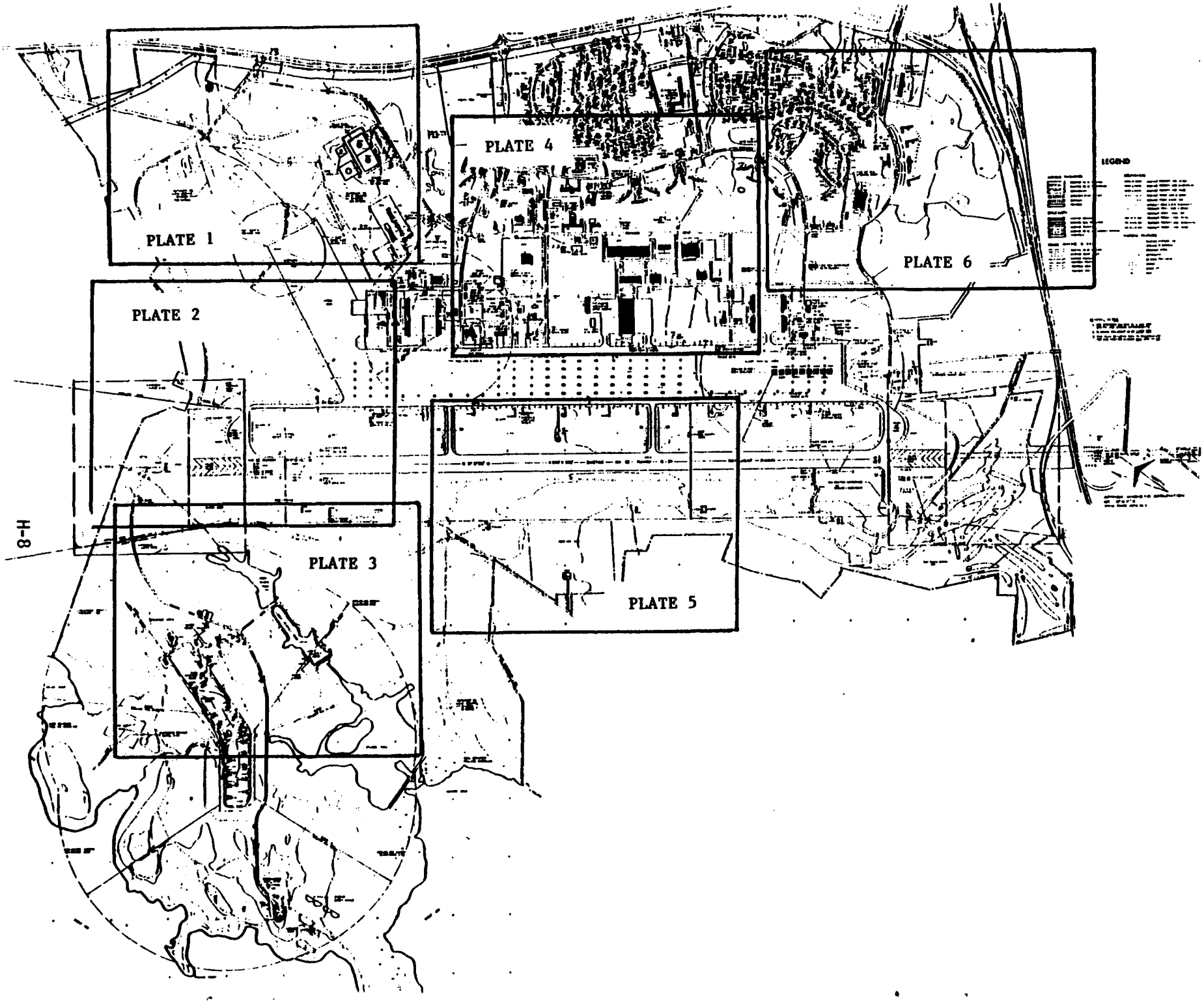


PLATE 1
PLATE 2
PLATE 3
PLATE 4
PLATE 5
PLATE 6
LEGEND

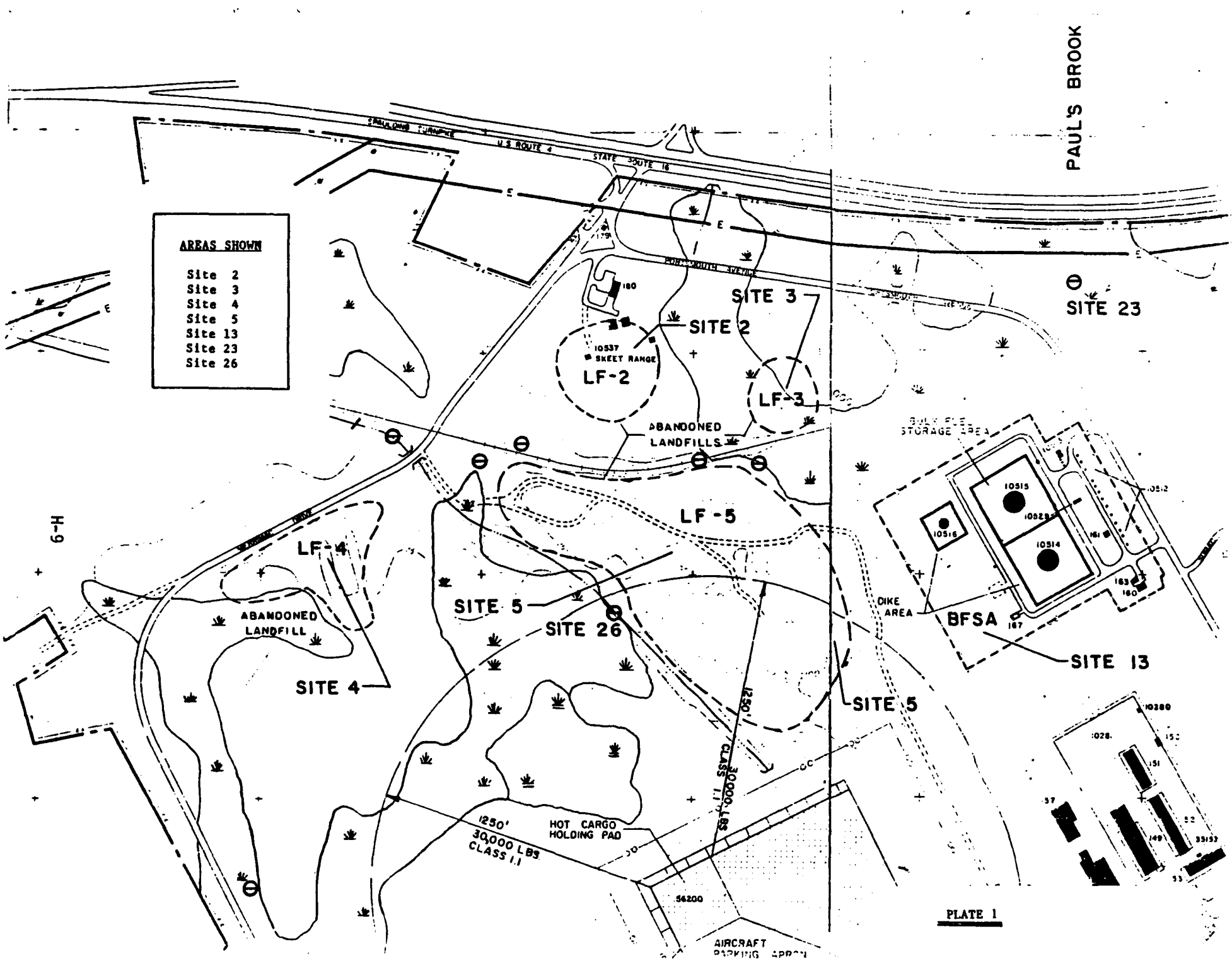
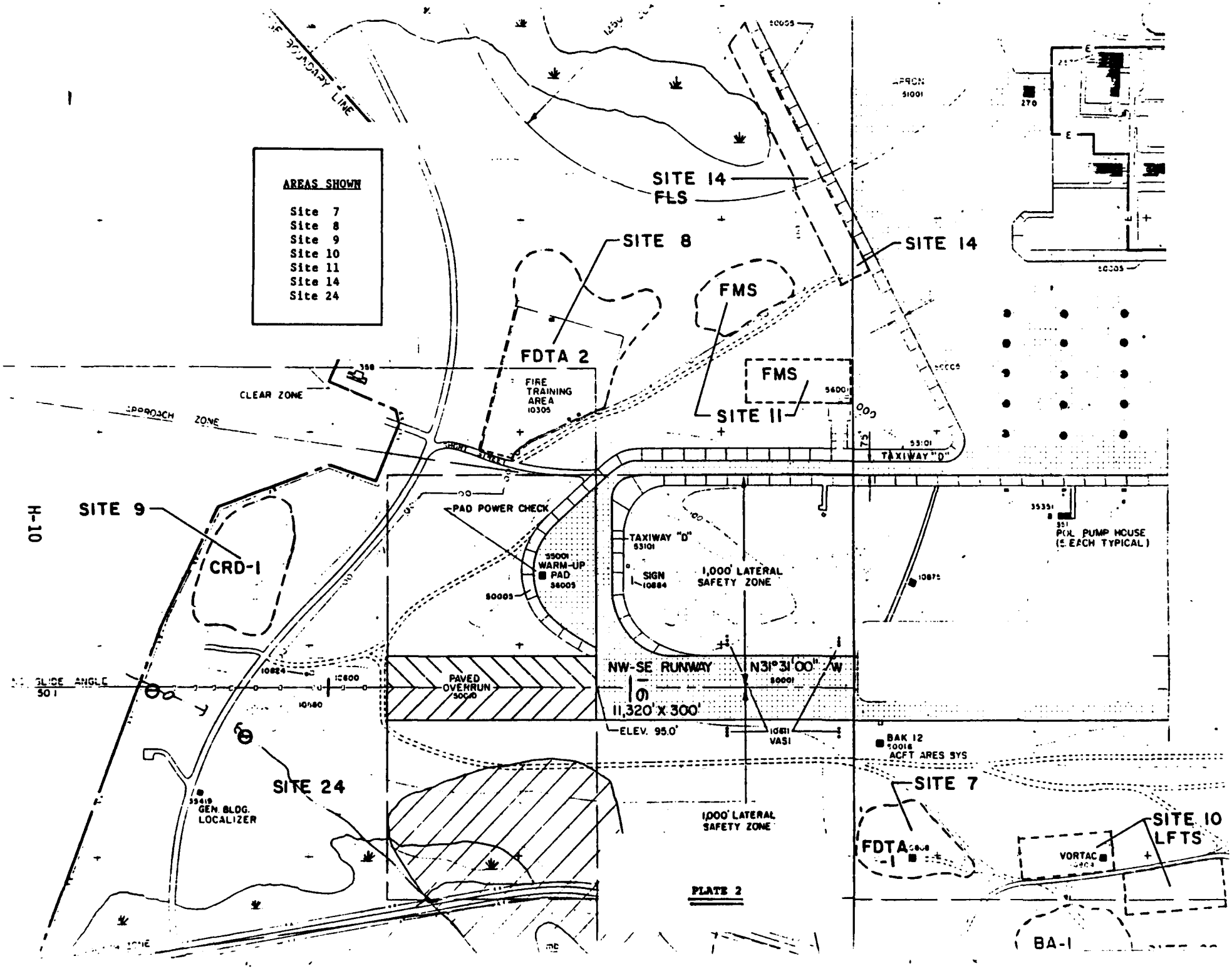
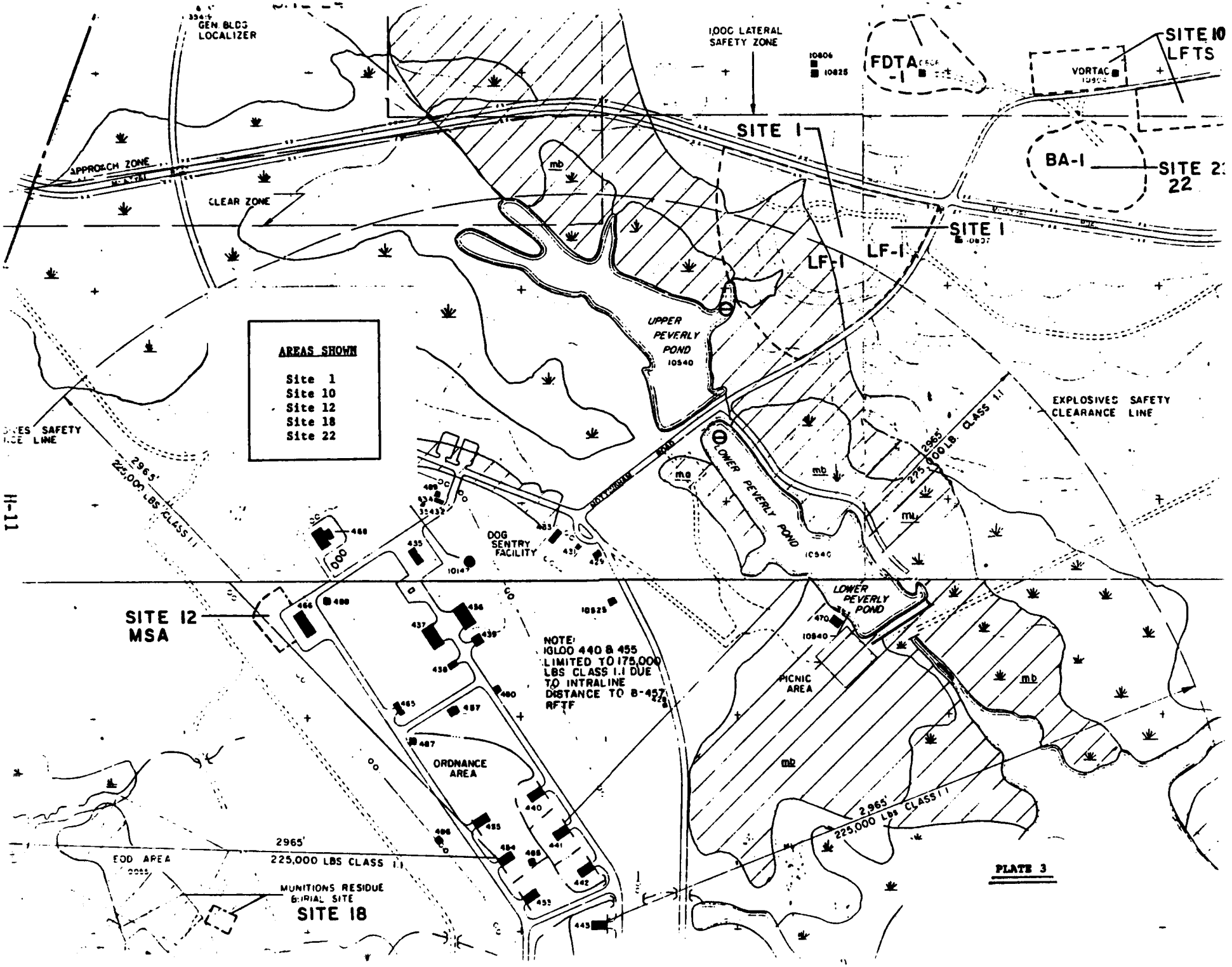
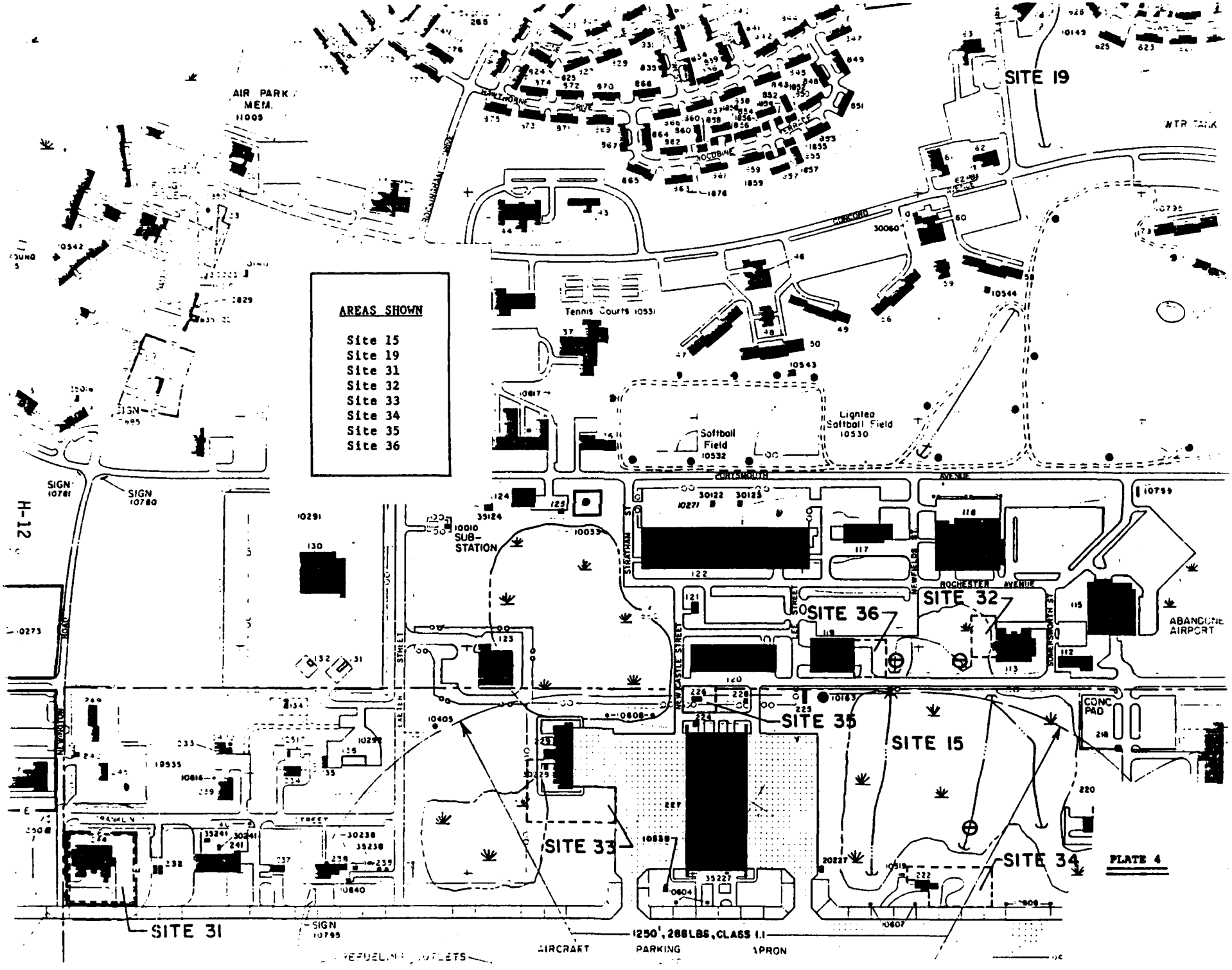
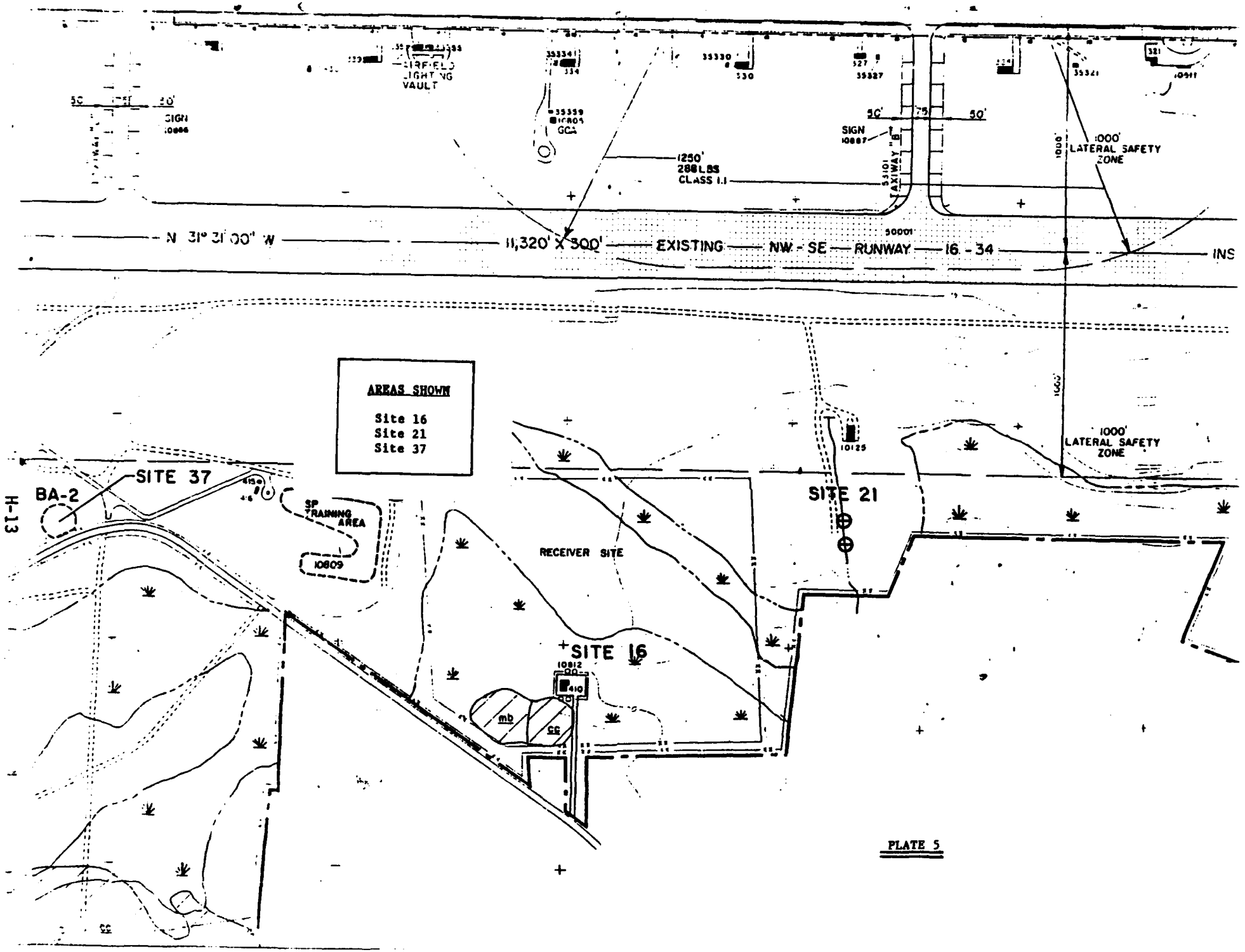

PAUL'S BROOK
U.S ROUTE 4
STATE ROUTE 18
MONMOUTH AVENUE
AREAS SHOWN
Site 2
Site 3
Site 4
Site 5
Site 13
Site 23
Site 26
SITE 3
SITE 2
SITE 23
10537
SKEET RANGE
LF-2
LF-3
ABANDONED
LANDFILLS
LF-5
LF-4
SITE 5
SITE 26
ABANDONED
LANDFILL
SITE 4
H-9
BULK FUEL
STORAGE AREA
10515
10516
10514
DIKE
AREA
BFSA
SITE 13
SITE 5
1250'
30,000 LBS
CLASS 1.1
HOT CARGO
HOLDING PAD
56200
AIRCRAFT
PARKING APRON

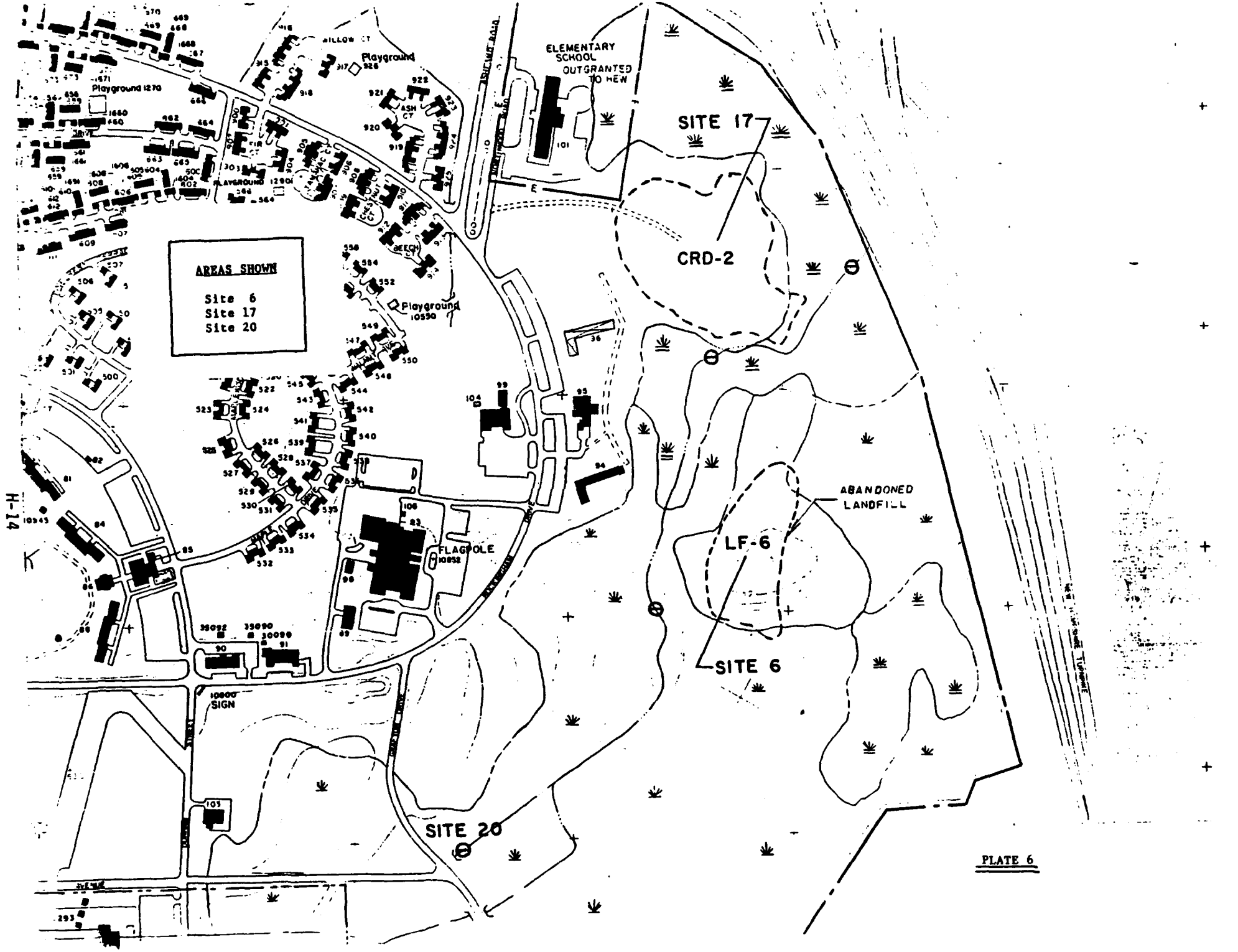
PLATE 1


AREAS SHOWN
Site 7
Site 8
Site 9
Site 10
Site 11
Site 14
Site 24
SITE 14
FLS
SITE 8
FDTA 2
FIRE TRAINING AREA 10305
FMS
FMS
SITE 11
SITE 14
CLEAR ZONE
APPROACH ZONE
TAXIWAY "D"
SITE 9
CRD-1
H-10
PAD POWER CHECK
TAXIWAY "D" 53101
SIGN 10884
1,000' LATERAL SAFETY ZONE
35001 WARM-UP PAD 36005
PCL PUMP HOUSE (5 EACH TYPICAL)
NW-SE RUNWAY
N31°31'00"W
11,320' X 300'
ELEV. 95.0'
PAVED OVERRUN
VASI
BAK 12 70016 ACFT ARES SYS
SITE 24
35419 GEN. BLDG. LOCALIZER
1,000' LATERAL SAFETY ZONE
SITE 7
FDTA
SITE 10 LFTS
VORTAC
PLATE 2
BA-1


GEN BLDG LOCALIZER
1000 LATERAL SAFETY ZONE
FDTA
VORTAC
SITE 10 LFTS
SITE 1
BA-1
SITE 22
APPROACH ZONE
CLEAR ZONE
LF-1
LF-1
SITE 1
UPPER PEVERLY POND
AREAS SHOWN
Site 1
Site 10
Site 12
Site 18
Site 22
EXPLOSIVES SAFETY CLEARANCE LINE
2965' 225,000 LBS CLASS 1.1
LOWER PEVERLY POND
DOG SENTRY FACILITY
SITE 12 MSA
NOTE: IGLOO 440 & 455 LIMITED TO 175,000 LBS CLASS 1.1 DUE TO INTRALINE DISTANCE TO B-457 RFTF
PICNIC AREA
ORDNANCE AREA
EOD AREA
2965' 225,000 LBS CLASS 1.1
MUNITIONS RESIDUE BURIAL SITE
SITE 18
PLATE 3
H-11


AREAS SHOWN
Site 15
Site 19
Site 31
Site 32
Site 33
Site 34
Site 35
Site 36
SITE 19
SITE 36
SITE 32
SITE 35
SITE 15
SITE 33
SITE 34
SITE 31
AIR PARK MEM.
Tennis Courts
Softball Field
Lighted Softball Field
SUB-STATION
ABANDONE AIRPORT
CONC PAD
1250', 288LBS, CLASS 1.1
AIRCRAFT PARKING APRON
PLATE 4


AREAS SHOWN
Site 16
Site 21
Site 37
N 31° 31' 00" W
11,320' X 300'
EXISTING
NW - SE
RUNWAY
16 - 34
1250'
288 LBS
CLASS 1.1
1000' LATERAL SAFETY ZONE
SITE 37
BA-2
H-13
SP TRAINING AREA
10809
RECEIVER SITE
SITE 21
SITE 16
10812
410
mb
cc
10125
PLATE 5


AREAS SHOWN
Site 6
Site 17
Site 20
ELEMENTARY SCHOOL
OUTGRANTED TO NEW
SITE 17
CRD-2
ABANDONED LANDFILL
LF-6
SITE 6
SITE 20
FLAGPOLE
10852
10000 SIGN
Playground
Playground 10550
Playground 12901
Playground 12701
ASH CT
WILLOW CT
ISLAND POND ROAD
H-14
PLATE 6

INDEX OF DOCUMENTS
INSTALLATION RESTORATION PROGRAM
PEASE AIR FORCE BASE, NEW HAMPSHIRE

1. INSTALLATION RESTORATION PROGRAM RECORDS SEARCH FOR PEASE AIR FORCE BASE, NEW HAMPSHIRE
   Prepared by CH2M HILL; Gainsville, Florida — January 1984

2. INSTALLATION RESTORATION PROGRAM
   PHASE II - PROBLEM CONFIRMATION AND QUANTIFICATION
   PRESURVEY REPORT
   Prepared by Roy F. Weston, Inc.
   West Chester, Pennsylvania — June 1984

3. INSTALLATION RESTORATION PROGRAM
   PHASE II - CONFIRMATION / QUANTIFICATION
   STAGE 1 VOLUMES I & II PAFB
   Prepared by Roy F. Weston, Inc.
   West Chester, Pennsylvania — August 1987

4. WORK PLAN FOR THE INTEGRATED INSTALLATION RESTORATION PROGRAM STAGE 2 PAFB
   Prepared by Roy F. Weston, Inc.
   West Chester, Pennsylavia — September 1987

5. QUALITY ASSURANCE PROJECT PLAN
   INTEGRATED INSTALLATION RESTORATION PROGRAM
   STAGE 2 DRAFT
   Prepared by Roy F. Weston, Inc.
   West Chester, Pennsylvania — September 1987

6. HEALTH AND SAFETY PLAN FOR THE INTEGRATED INSTALLATION RESTORATION PROGRAM STAGE 2
   Prepared by Roy F. Weston, Inc.
   West Chester, Pennsylvania — September 1987

7. INTERIM TECHNICAL REPORT NO. 1 FOR THE INSTALLATION RESTORATION PROGRAM
   STAGE 2 VOLUME I & II DRAFT
   Prepared by Roy F. Weston, Inc.
   West Chester, Pennsylvania — February 1988

8. INTERIM TECHNICAL REPORT NO.2 FOR THE INSTALLATION RESTORATION PROGRAM
   STAGE 2 VOLUMES I - V DRAFT
   Prepared by Roy F. Weston, Inc.
   West Chester, Pennsylvania — August 1988

9. INTERIM TECHNICAL REPORT NO.3 FOR THE
INSTALLATION RESTORATION PROGRAM
STAGE 2 VOLUMES I & II DRAFT
Prepared by Roy F. Weston, Inc.
West Chester, Pennsylvania — February 1989

10. INTERIM TECHNICAL REPORT NO. 4 FOR THE
INSTALLATION RESTORATION PROGRAM
STAGE 2 VOLUMES I - VII DRAFT
Prepared by Roy F. Weston, Inc.
West Chester, Pennsylvania — April 1989

11. WORK PLAN FOR THE
INSTALLATION RESTORATION PROGRAM
STAGE 3
Prepared by Roy F. Weston, Inc.
West Chester, Pennsylvania — August 1989

12. QUALITY ASSURANCE PROJECT PLAN
INSTALLATION RESTORATION PROGRAM STAGE 3
Prepared by Roy F. Weston, Inc.
West Chester, Pennsylvania — August 1989

13. HEALTH AND SAFETY PLAN FOR THE INSTALLATION
RESTORATION PROGRAM, STAGE 3 DRAFT
Prepared by Roy F. Weston, Inc.
West Chester, Pennsylvania — August 1989

NOTE: The Installation Restoration Program (IRP) Stage 2 Final Report is in draft form and currently in the review process. Estimated issue date is mid-June 1990.

LOCATION OF DOCUMENTS: Pease CARE Office
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